



CHEETAL

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The Wild Life Preservation Society of India

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No. 3

Dedicated to the Memory of
the late Shri Sohan Singh Negi.

Photo by S.P. Shahi



Wild Life Preservation Society of India

1. The aims and objects of the Society are as follows:—

- (a) To promote interest in and impart knowledge regarding the preservation and conservation of all forms of wild life, particularly among the youth of the country.
- (b) To co-operate with the Govts. of India and States and with other Societies and Institutions having similar aims and objects in working for the interests of wild life.
- (c) To assist in enforcing and actively supporting the Forest Acts, Wild Birds and Animals Protection Acts and Rules etc. of States and the Indian Arms Act and Rules in so far as they pertain to wild life and to bring to the notice of the authorities any infringement of the same and to assist in the detection and prosecution of offenders in respect of such laws.
- (d) To advise and help the Govt. and wild life administrators in the formation, maintenance and protection of Sanctuaries and National Parks, the preservation of wild life in general and rare species of India in particular and in the introduction of exotic species into the country, the rehabilitation of rare species etc. and in the revision on rational lines of the shooting and fishing rules, so as to conserve and increase wild life stocks.
- (e) To raise funds for the carrying out of the above aims and objects and to found and maintain museums, reading rooms and libraries of natural history in order to disseminate knowledge regarding wild life.
- (f) To promote sportsmanship in shikar and to recognise well regulated shooting and fishing, as a means of preserving wild life and fish so that through wise use the surplus may provide a recreational asset to the nation.
- (g) To carry out publicity and propaganda for the preservation of wild life in India by means of monographs, journals, films, film strips and other feasible methods.
- (h) To assist members of the Society in obtaining shooting and fishing facilities and facilities for viewing and photographing wild life in India.
- (i) To conduct research into the problem of Wild Life management in India, and in pursuance of this, to initiate, encourage and, where possible assist in projects for the study of threatened species and related subjects and to provide reference and research facilities for such work.
- (j) To carry on such other activities which will serve the above subjects.

What membership of Wild Life Preservation Society of India will entitle you to ?

1. You will become an active member of the growing group of Wild Life enthusiasts, who enjoy working for and spreading the knowledge of how to conserve India's heritage of Wild Life for posterity.
2. You will be entitled to the full use of the Library of the Wild Life Preservation Society and of its reading room.
3. You will receive a membership certificate.
4. You will receive personal Identification and Membership card.
5. You will be entitled to buy all publications of the Society at a concessional rate.
6. You will be entitled to buy at concessional rates the Society's Greeting Cards, Calendars, Tie, Lapel badge and the Balance of Nature Game (specially Published in colour for its educative and recreational value).
7. You will be supplied "Cheetal", the quarterly journal of the Society free.

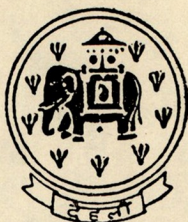
For membership particulars write to Honorary Secretary, Wild Life Preservation Society of India, 7 Astley Hall, Dehra Dun.

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Members and Subscribers are requested to note that all yearly subscriptions fall due on 1st of April each year. They are requested to pay in time so that Cheetal may be sent to them regularly.

Honorary Secretary.



RAJ NIWAS
DELHI

LIEUTENANT GOVERNOR

6.12.71.

Dear Dr. Misra,

I am very glad that you are bringing out S.S. Negi's Memorial Number of Cheetal and I am happy to avail of this opportunity to pay my tribute to the memory of one from whom I learnt most of my forestry and whom I always looked upon as one of my closest friends. Right up to the end Shri Negi continued to work with the same zeal and to whom more than anybody else goes the credit of land conservation in U.P. and the afforestation of hundreds of acres around Delhi.

I remain,
Yours Sincerely,
A.N. JHA

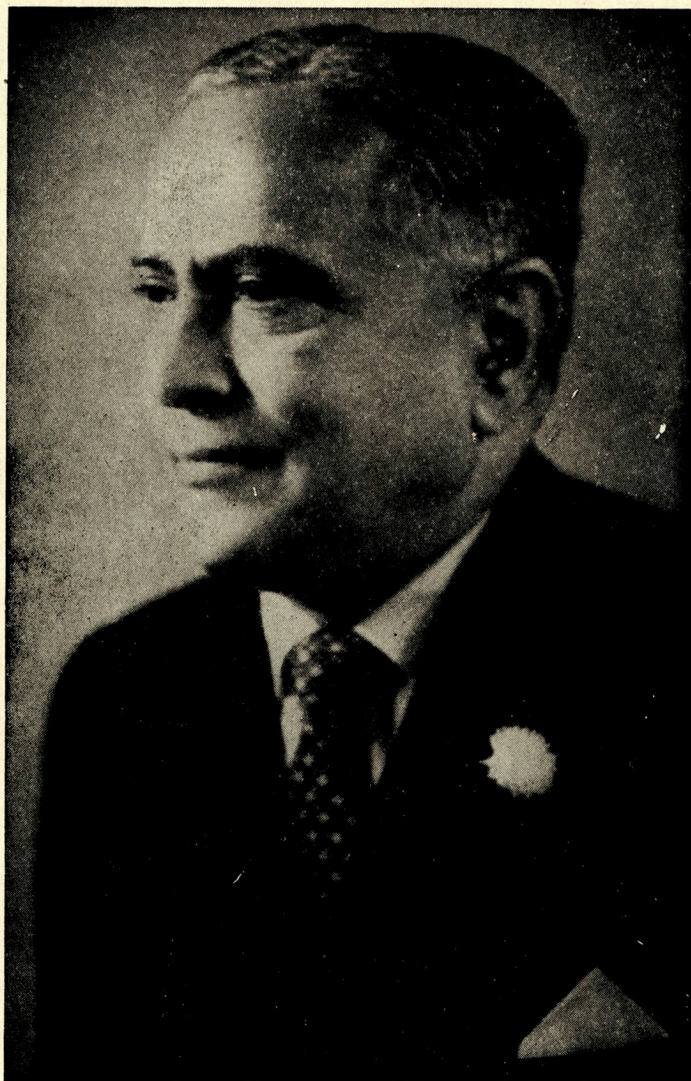
*6. Panch Sheel Marg
Chanakyaपुरी New Delhi-21*

January 4, 1972.

Dear Dr. Misra,

I am happy the Society is bringing out a Special number of Cheetal in memory of the late Shri S.S. Negi, former Executive Vice-President who was near to all of us and who had the interest of Wild Life Conservation so dear to his heart. But for his untiring zeal and hard work the Society would not have progressed as it has and served the cause of conservation so well. As Chief Wild Life Warden he did some very good work in finding a second home in Chandraprabha Sanctuary for the Indian Lion and for organising Wild Life conservation movement in Uttar Pradesh. His memory will live long in the hearts of Wild Life Conservationists in India.

Yours Sincerely,
Pratap Singh
Maharaja of Nabha
President,
Wild Life Preservation Society of India.



THE LATE SHRI SOHAN SINGH NEGI.

Wild Life Preservation Society of India

VOL. XIV

DECEMBER, 1971

No. 3

Obituary

THE LATE SOHAN SINGH NEGI

(15. 6. 1900 to 7.4. 1971)

It is with a heavy heart that we record the sad demise of Shri Sohan Singh Negi, on the 7th April 1971. Shri Negi maintained excellent health right through his active career but during the last few months of his life, he was struck by an ailment which could not at first be diagnosed but later developed into lung cancer. He was admitted to the All India Institute of Medical Sciences, New Delhi, for treatment, but it was too late. Shri Negi succumbed to the disease leaving a widow, two sons, a daughter and a host of relatives and friends to mourn his loss.

Shri Negi was born at Dehra Dun where he received his early education. It was here that he acquired a keen interest in the forests and wild life and it was therefore not surprising that he entered the then United Provinces Forest Department in 1925 as an Extra-Assistant Conservator of Forests, after obtaining his degree from Allahabad University and undergoing the two year forestry course at Dehra Dun. He served in a number of Divisions in the State, in the meantime gaining in experience, developing a flare for organization and acquiring an ardent devotion for wild life. He was promoted to the rank of Deputy Conservator of Forests in 1940 and held charge of a number of important specialist posts in the Department. During the War he served as Personal Assistant to the then Chief Conservator of Forests, an Englishman, who recognised Shri Negi's talents by selecting him to this prestigious post at a time when the Forest Department had to meet the heavy and unprecedented demands for timber. In 1952 he was promoted to the rank of Conservator of Forests and took charge of the operations to arrest the spread of the desert into the fertile lands of U.P. and the afforestation of the Agra ravines. With the creation of a separate Wild Life Wing within the

Forest Department in U.P., Shri Negi was appointed the first Chief Wild Life Warden in 1956 and continued in the post till his retirement in 1958. During his tenure as Chief Wild Life Warden, he developed Corbett National Park into a major tourist attraction and was instrumental in the creation of a number of wild life sanctuaries in U.P. He is perhaps best known for his attempt to provide a second home for the Gir lions, in the Chandra Prabha Sanctuary near Varanasi. He keenly followed the progress of the lions in the Sanctuary, and rejoiced in their increase in numbers. It was to his great sorrow that in subsequent years all trace was lost of these lions.

Shri Negi was a founder member of the Wild Life Preservation Society of India and later became its Senior Vice-President. He took an ardent interest in the affairs of the Society and it was largely through his zeal that the Society has been able to develop and increase its membership. Credit must go to him, among others, for the unique issue of the CHEETAL which was brought out as a special number to commemorate the General Body Meeting of the International Union for the Conservation of Nature and Natural Resources held in Delhi in 1969.

Shri Negi was of a very amiable temperament, social and friendly. He was always helpful to his colleagues and to those that sought his help. He was equally loved and respected by his officers, colleagues and subordinates. His friends, colleagues and all those who knew him will miss him greatly and in his death the Wild Life of the country have lost an energetic benefactor.

The members of the Wild Life Preservation Society of India offer their heartfelt condolences to Shrimati Negi, her children and other members of the bereaved family and have decided to dedicate this issue of the CHEETAL to his memory.

Wild Life Management and Research in Australia

(V.B. SINGH, I.F.S.)

Australia was separated from the other land masses of the world at a very early stage. After the separation (probably by subsidence in the region of the Malay Archipelago) no land animals were able to enter or leave Australia, because of the barrier of the sea. The primitive animals of that early age were left to live and evolve there, independent of the competition that raged elsewhere. The fossils of early animals are found representing long extinct animal forms similar to those which still live in Australia.

The native wild life of Australia consists of about 390 reptiles, 230 mammals and some 700 bird species. Settlers brought about 20 additional species of mammals and more than 25 species of birds. Mammals are believed to have evolved from egg laying, cold-blooded reptiles. Soon after the discovery of Australia, the scientific world was astonished by the discovery of the 'missing link' in that relationship—the platypus, which bears fur and secretes milk for the maternal feeding of the young, but which, lays soft-shelled rounded eggs, almost identical with some of the reptiles eggs. Further, though 'warm-blooded' the body temperature is lower and more variable than that of any other mammal.

Later a second 'missing link' of similar character was discovered, also in Australia—the Echidna or spiny anteater. This animal, having no nest or permanent home, develops at breeding time, a fold of skin on the abdomen in which the eggs are carried and kept warm, and within which the milk glands are situated.

These two are the only egg-laying mammals living (mono-tremes) in any part of the world. Australia has almost 150 species and varieties of marsupials. By contrast, only two types of marsupials occur outside the Australian region—the opossums of North America and the selvas of South America. Both the types of marsupials—the carnivorous and the vegetarians—exist in the country. Vegetarian marsupials include the many kinds of kangaroos and their smaller counterparts of the rocky hill country, the Wallabies. Intermediate in size is a range of Kangaroo-like animals known as Wallaroos, euros, pademelons, red-Kangaroos etc.

Wombats live in burrows and feed on roots, leaves and bark. The koala lives almost exclusively among the branches of trees. Other tree-dwellers are the possums, gliders and cuscus. Bandicoots, superficially rat-like are the link between the carnivorous and the vegetarian marsupials.

Tasmanian tiger or the famous marsupial wolf is confined to Tasmania and is now either already extinct or on the verge of extinction. There are still native cats and tiger cats, which are actually dasyures, not cats and a great variety of marsupials rats and mice.

Of placental mammals, there are a few native true rats and mice, bats, seals, and as a special type, the dingo or native dog. No precisely similar dog is known anywhere else in the world and it is now generally agreed that it was introduced by the aborigines who came to Australia from the north, thousands of years ago. No one, however, knows from where the aborigines came.

Australia is very rich in bird life. The symphonic lyre-bird, the aesthetic Bower-birds, the incomparable Fairy wrens, the mound building megapodes are only a few of its unique birds. Emu is most common in the dryer areas. Cape Barren Geese and Magpie-Geese face extinction. Australian Bustard or Plains Turkey has almost vanished. Rainbow lorikeet, Mallee Ringneck and Whitenaped honeyeater, Green and Crimson Rosella, and the White cockatoo are some of the common birds. The country is equally rich in reptiles and amphibians. The largest reptiles are the tropical Estuarine crocodiles, exceeding at times twenty feet in length and two tons in weight. Marine turtles, aquatic tortoises, snakes, lizards and over one hundred distinct species of frogs give a fascinating variety to the fauna of that country.

Wild Life Management

The different States of the Australian Commonwealth have separate departments to manage wild life. An idea of the steps taken by the various States can be had by discussing how the State of Victoria manages its wild life.

The Fisheries and Wild Life Deptt. of Victoria controls 24 State Wild Life Reserves totalling 105,020 acres. Thirteen of these are game reserves, in which licensed shooting of game is permitted in the appropriate open season. The remaining areas are State Faunal Reserves and State Game Refuges on which shooting is prohibited at all times.

All Wild Life Reserves are primarily managed for wild life as a whole. It is a fundamental concept in wild life management that it is not practical to cater for a segment of the wild life of a particular environment. This does not preclude particular projects aimed at one species or one association of species, nor does it imply that all species are desirable at any population level. It is a general principle applied to the overall Reserve Programme. The three types of Reserves are:—

- 1—*State Game Reserve*—An area of land managed by the Fisheries and Wild Life Department for wild life. Shooting of game under regulations is not detrimental to general wild life conservation and licenced shooting is permitted during the open season. At all other times shooting is prohibited.
- 2—*State Game Refuge*—An area of land managed by the Fisheries and Wild Life Department for wild life. In these areas, emphasis is placed on their role as a haven for game during the open season. No shooting is permitted at any time.

3—*State Faunal Reserves*—An area of land managed by the Fisheries and Wild Life Department for wild life. Emphasis is placed on the conservation of non-game species, either as individual species or as faunal associations.

Management Plans

Game Management Officers (Agricultural Diplomats) are responsible to the Reserves Manager for Wild Life Reserves in their respective regions of Victoria. One of their important initial tasks is the compilation of a basic Reserve Management Plan for each Reserve under their control to cover the initial five-year development period, with subsequent revisions.

These plans cover all aspects of protection, development and use of reserves, and form part of the Reserves Manual, which includes Staff Instructions and Administrative Procedures as well as the Management Plan for each Reserve.

Development of Wild Life Habitat—

Most of the newer Wild Life Reserves do not immediately provide ideal habitat for wild life. These areas have often been cleared, grazed, periodically burnt, drained or otherwise altered so that considerable work is necessary to develop the area to its maximum productivity for wild life. This entails programmes for such activities as water supply, tree planting, fire protection, fencing, vermin control and construction of access tracts.

The basic aim in this development work is not to restore the area to completely natural habitat, nor to preserve it in its present state, but to develop it so that it will support the optimum (not necessarily maximum) wild life populations. The provision of artificial shelters and nests, or cultivation of areas for food crops, are a part of this type of management. Normal plantation spacing as carried out by the Forest Department is too dense for some wild life requirements.

Co-operative Projects

Many instances occur where an area of land is primarily managed for a purpose other than wild life conservation. In these cases wild life management is accepted as a secondary but nevertheless major management objective. A set of management prescriptions is drawn up allowing the wild life department to carry out wild life conservation work within the area. Such a co-operative project operates within the Bael Bael State Forest, which adjoins the Koorangie State Game Reserve near Kerang. This area of Reserved Forest forms a valuable part of the terminal swamps of the Avoca River and provides an ideal waterfowl habitat when water conditions are suitable.

Private Sector

Dozens of small but effective organisations with interests in wild life botany, entomology, marine biology, landscape preservation, national parks, skiing, skin-diving, game shooting and kindred pursuits take active steps in the preservation of wild life and natural

environments. A most important step is the formation of a private national body, the Australian Conservation Foundation with the Chief Justice of Australia as its president. This body seeks to identify the more significant problems of environmental decline. Recently it was awarded a \$ 50,000 a year Commonwealth grant to further this work.

In the private sector, the leading shooting organisation, the Victorian Field and Game Association, co-operated with the department in promoting a \$ 2 State duck licence system, which now contributes \$ 75,000 annually towards the cost of staffing and managing the reserve system. In many parts of the world, hunting licence revenue is made directly available to the Wild Life Service for expenditure on the conservation of wild life and this practice continues in Victoria also.

Research in Wild Life Management

Research in wild life is carried out by various agencies. The Commonwealth Government through its research organisations carries out the bulk of work in this field. The State Governments, Universities and other private bodies carry out equally important work in wild life research.

Commonwealth Scientific and Industrial Research Organisation (C.S.I.R.O.)

The Division of Wild Life Research of the Commonwealth Scientific and Industrial Research Organisation was established to study mammals and birds in Australia. It has been conducting fauna surveys in recent years. In addition to surveying specific areas in widely separated regions of Australia and New Guinea, the Division has mapped the total distribution of several species. In each case, where surveys have been undertaken for a variety of reasons, the results have also been interpreted from the stand point of fauna conservation.

The work of the Division is directed as follows:—

- (i) To provide background knowledge of the status and basic biology of the animals concerned;
- (ii) To increase existing scientific knowledge by research on fundamental principles in animal ecology, behaviour and physiology, and
- (iii) To point to the way in which this knowledge may be applied in the management of wild life resources.

Much of the Divisions' work has to be done in the field by working from base camps for protracted periods. This field work is integrated with complementary studies of animals under experimentally controlled conditions of confined populations in enclosures and in the laboratory at the Division's Headquarters, 'Gungahlin', at Canberra, A.C.T. The Division works in collaboration with State Departments, the Antarctic Division of the Department of

External Affairs, the Universities. Most of its field investigations would be impossible without the co-operation and assistance of individual land-holders.

Staff—The Division is suitably staffed to man the various branches. The following gives the details of various sections and the staff engaged in each section:—

(1) Administration

- (a) Chief
- (b) Divisional Administrative Officer
- (c) Librarian
- (d) Research Photography
- (e) Illustration

(2) Marsupial Biology

- (a) Principal Research Scientist
- (b) Senior Research Scientist
- (c) Experimental Officer
- (d) Technical Officer

(3) Rabbit Biology

- (a) Senior Principal Research Scientist
- (b) Principal Research Scientist
- (c) Senior Research Scientist
- (d) Research Scientist
- (e) Experimental Officers (3)
- (f) Senior Technical Officers (2)
- (g) Technical Officers (4)

(4) Rabbit Control

- (a) Scientific Services Officer

(5) Field Ecology

A—(Located at Canberra)

- (a) Chief
- (b) Senior Research Scientists (2)
- (c) Research Scientist
- (d) Experimental Officer
- (e) Technical Officers (4)

B—(Located at Perth)

- (a) Senior Principal Research Scientist
- (b) Principal Research Scientist
- (c) Senior Research Scientist
- (d) Experimental Officers (2)

C—(Located at Alice Springs, N.T.)

- (a) Experimental Officer

D—(On secondment to Mawson Institute for Antarctic Research, Adelaide, S.A.)

- (a) Senior Principal Research Scientist
- (b) Experimental Officer

(6) Animal Physiology

- (a) Principal Research Scientist
- (b) Experimental Officer
- (c) Technical Officers (2)

(7) Field Surveys & Collections

- (a) Experimental Officer
- (b) Senior Technical Officer

(8) Australian Bird-Banding Scheme

- (a) Technical Officer

Some of the important activities being carried out by the Division of Wild Life are as follows:—

Fauna Surveys—Adequate and rational conservation policies can be framed only if we know the distribution, relative abundance in different areas and the ecological requirements such as food and shelter of various species of wild life. With the help of an officer of the Division of Land Research, birds in several localities in New-Guinea have been surveyed. Surveys of bird distribution in arid inland Western Australia have also been carried out for a number of years. Currently efforts are being made to find out which birds and mammals inhabit the Kosciuszko National Park, the largest reserve in New South Wales, covering more than 1,250,000 acres. Also being examined jointly with the New South Wales National Park, the Wild Life Service and the Australian Museum, is the South Coast region of the State.

This survey has indicated that pulpwood harvesting poses a very serious threat to wild life because it can utilise large areas of forest and bushland that previously had no economic value. Many of them are capable of radically altering entire ecosystems.

Pests and Predators—The pest status of some species are being measured to determine whether it needs controlling. If it does, by a detailed study of its biology, including its behaviour, a sound basis is provided for making the control both effective and economic. Studies have been carried out, among others, on rabbits (*Oryctolagus cuniculus*), the euro (*Macropus robustus*), the Tasmanian hen (*Tribonyx mortierii*) etc.

There has been relatively little research on individual predatory species, but the Division of Wild Life Research is currently studying the ravens (*Corvus* spp.), the dingo (*Canis familiaris-dingo*) and the wedge tailed eagle (*Aquila audax*). Results clearly indicate a need to relinquish the traditional 'fly-swat' type of pest control, which simply reduces symptoms from time to time, and to implement a concept of managing the species and their habitats by methods based on full knowledge of the animals. This approach would ensure a much better return on the investment in control, and would lead to control techniques that avoid the killing of non-target species.

Bird Banding—The research programme of the C.S.I.R.O. has been greatly benefited by wide banding coverage. The Australian Bird Banding Scheme was launched, in October 1953, and is now keenly supported by the States and Territory fauna authorities. The Central office staff are drawn from the Division of Wild Life Research. In addition, State Government organizations concerned with waterfowl operate five other small banding schemes, which pursue specific projects, aimed at improving the management of the waterfowl resources.

Since the scheme started, 7,80,000 birds of 657 species have been banded. Of these 70,500 (9.1%) have been recovered. Information on bird migrations and dispersal and an understanding of the ecology and behaviour of the birds are the expected results of a banding scheme. Useful data are also accumulating on vital matters concerning the size and stability of populations, such as breeding ecology, survival, longevity, mortality rates and age structures of the populations. Apart from its intrinsic scientific importance, this information is essential if the economic status and sporting potential of the birds is to be properly appreciated. Effective conservation programmes and sensible legislation can only be formulated on the basis of such knowledge.

Research carried out by Universities—An idea of the work done in this field by universities can be had by looking into the activities of the Department of Zoology of Monash University. In addition to the basic research work done by the Department, they help in the following ways:—

- (i) The University is asked for advice or to sit on advisory committees concerned with wild life research.

- (ii) Members of outside institutions such as the Department of Fisheries and Wild Life enroll to do M.Sc. degrees and such programmes are supervised by the Zoology department and financed by the outside institutions. The project proposed by the outside institution must have good academic potential, such as:
- (a) The Ecology of the King George whiting in Western Port Bay in Victoria — Fisheries and Wild Life Departments.
 - (b) Biology of the Southern Fur Seal (Fisheries and Wild Life Deptt.).
 - (c) Ecology of the blackberry in Victoria (Lands Deptt.).
 - (d) The effects of forest management practices on mammal populations (Forest Commission).
 - (e) Research into hog deer in Victoria. This is part of a research and management programme in this species, jointly supported by the Fisheries and Wild Life Department of Victoria, the Zoology Deptt. of Monash University, Para Park Co-operative Game Reserve Ltd., and the Sporting Shooters Association of Victoria.

Research on Hog Deer

Despite efforts to establish hog deer (para) in other parts of the world, it has become acclimatised only in South Gippsland on the coastal region, and the offshore islands to which it was either introduced or driven. Its size makes it the smallest species in Australia and the easiest to manage as it allows greater numbers to be carried on a limited area. Sunday island, which is the only freehold island of sufficient size off the Victoria Coast and was available for purchase and which already has hog deer in the area was selected for the protection of this species. But before protection can be given to any deer, particularly exotic species, scientific research must be undertaken, backed up in practice, as to the place of deer, in the ecology of the habitat its effect on native fauna and all other considerations to possibly effected persons, projects and enterprises. A Co-operative Society known as Para Park Co-operative Game Reserve Limited was formed which raised £ 10,000 for improvement over a period of 10 years. Intensive research work on the various aspects of ecology and biology of the hog deer is being carried out now in co-operation with Monash University, the Fisheries and Wild Life Department and other interested business houses like Imperial Chemical Industries of Australia and New Zealand Limited.

Serendip Wild Life Research Station

In 1959, the Fisheries and Wild Life Deptt. of Victoria purchased a 625 acre property at Lara for development as a research centre for the Department's Wild Life Conservation Programme. The area has an 80 acres artificial lake which forms the basis of the central 'wild life area' which is surrounded by Agricultural paddocks under lease.

Adjacent to the wild life area is a research centre which is currently being developed. Machinery shed, banding shed, animal house and associated service block, waterfowl pens, goose ponds and a variety of dryland pens and shelters ranging from a few square yards upto 2 acres have been provided. A main laboratory, an infirmary, waterfowl and dryland pens, and an observation tower were further provided.

The agricultural lease area is being developed under a Soil Conservation Authority Farm Plan as a demonstration area for land-holders, so that it may be shown that wild life can be supported on farm-land without detriment to agricultural interests. This centre is also a major site for research into behaviour and breeding habits of wild life, including such rare species as the Cape Barea goose, brolga, bustard, and Pied goose, all once common in Victoria. Investigations into other species, such as mallee fowl, potoroo and quail are also commencing.

Conclusion

Australia's wild life constitutes one of the world's wonders. It has all the egg-laying mammals and a high population of the marsupials. The people of Australia love their wild life and their forests and they have taken measures to ensure that a useful portion survives. It will be worth quoting George P. Marsh who in 1864 wrote in 'Man and Nature' as follows:

"Australia is, perhaps, the country from which we have a right to expect the fullest elucidation of wild life ecology problems...The peculiarities of its fauna, its flora, and its geology are such as to have excited for it the liveliest interest of the votaries of natural science; its mines have given its people the necessary wealth for procuring the means of instrumental observation and the leisure required for the pursuit of scientific research".

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 3. Rural Research in C.S.I.R.O.—1966—June 1969.
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The Vanishing Wildlife Causes and Cure

By

SHER JUNG

The vanishing wildlife of India is causing concern to every right-thinking person. The main reason of this tragedy is believed to be the clandestine killing. This widely held belief was voiced by Dr. Karan Singh on the occasion of the tenth anniversary of World Wildlife Fund when he suggested that the poachers should be shot out of hand. He moaned for the fate of wildlife in India and prophesised that there is no hope for wild animals to survive in this country, except in its sanctuaries and zoological parks.

I had a lump in my throat when I heard this prophecy of doom, but his suggestion to do away with the poachers revived my spirits. I even felt like lending him a helping hand by joining his firing squad. But then certain doubts about the genesis of the problem gnawed at my heart and pointed out another category of persons who deserve priority over others to be lined up against the wall.

But, before deciding on the priority issue for the firing squad let us examine the statement of Dr. Karan Singh, for it sums up, not only the official thinking but also the popular belief in regard to the wildlife problem. The statement makes out three clear points: (1) The Indian forest hold no more hope for the survival of wild animals, (2) The wild animals can only survive in sanctuaries and zoological parks, (3) The main cause for wildlife depletion is clandestine killing—known as poaching.

Indian Forests

Gone are the days when Emperor Jehangir could write that 'the foothill forests of Kangra Valley are so thick that even a small bird cannot spread its wings and fly away. The whole place is crawling with game.' Today the same area, hundreds and hundreds of square miles of it, stands barren, deeply eroded, bereft of any tree big enough to provide shade. A few grass blades that one finds, here and there, clinging to the earth, are hopelessly struggling to keep alive. And wildlife, even the humblest of them is conspicuous by its absence.

Nearer our times, in 1857, Colonel G.A. Smith found the 'district of Delhi' thickly covered with scrub forest, where he shot fifty lions within the span of just one year. Today, you are lucky if you could spot fifty rabbits in your year long search. The area has long been denuded of its sprawling scrub and consequently of its wildlife, worth the name. Even black buck which were in abundance fifteen years ago, are extinct in the area and near-extinct in the adjoining States.

These two extreme examples prove (if at all it is necessary) the simple truth that natural forests are the basis of wildlife, and without effective conservation of flora there can be no conservation of fauna. From this it follows that wildlife is a coincidence of relations and

exists in direct proportion to the extent of its habitat, that is, the forests. Now let us see how much forest area there is, and how are we conserving it !

Forest Area: The total geographical area of our country is around 327.6 million hectares. Out of this total area, only 56.1* million hectares are under forest today. It works out to 17% of the total land area. And mind you, it is only on paper; in actual state, from the conditions I have seen, it is doubtful if the figures can go even upto 10%. Now compare these figures with the figures from some progressive countries:

(Source—Forestry Commission, Government of India.)

Country	Total Forest Area (in million hecets.)	Percentage over entire geographical area
Japan	23 mil. hecets.	63%
USSR	1,131 mil. hecets.	51%
USA	316 mil. hecets.	43%
Europe	141 mil. hecets.	30%
Asia	520 mil. hecets.	19%
World	4,405 mil. hecets.	33%

And if the comparison is made on the basis of human population, our poverty in forests becomes even more glaring:

Country	Total population	Forest area per 1000 persons
India	443 millions	127 hectares
Japan	94 „	250 „
USSR	218 „	5,200 „
USA	179 „	1,725 „
Europe	430 „	325 „
Asia	1,721 „	300 „
World	3,069 „	1,425 „

*Editor's Note: Actually it is 75.33 million hectares or about 23% of the total geographical area.

(All the above and the preceding figures are from 1961 record)

This average of 127 hectares per one thousand persons in our country (which works out roughly to one-third of an acre per person) is, in itself quite inadequate; its State-wise break up makes matters even worse.

State	Forest area per 1000 persons
West Bengal	50 hectares
Kerala & Madras	70 "
Gujarat	110 "
Bihar	80 "
Punjab & U.P.	90 "

The picture that emerges from the above figures is indicative of two things:

(1) The existing forest area compared to the total land area, is too small for wildlife to live and proliferate in any appreciable number.

(2) The per capital ratio between available forests and human population is so irrational that it has created conditions for human interference with wilderness areas to such an extent that the peaceful existence and ultimate survival of wildlife has virtually become a near-impossibility.

Types of Forest:

The 56 million hectares of our country, loosely termed as forest area, is not all covered with trees, but also (and more than half of it) with scrub, grass, swamps, and barren land. For simplicity's sake, we can divide this entire area in four types of forests: (1) Coniferous, (2) Broad-leaved, (3) Grassy and scrub, (4) Tidal and swampy.

Out of these four the latter two have been nearly destroyed in the name of "reclamation". For instance the tidal forests of the Sunderbans had, till the middle of the 19th century, an estimated area of 10,000 square miles between the rivers Hooghly and Feny. By the time India attained freedom in 1947, the area of the Sunderbans shrank to 4,000 sq. miles—the rest was swallowed up by the process of colonisation, the end of which we have yet to see. The destruction of this unique area, necessarily entailed the destruction of its wildlife. The wild buffalo and the Javan rhinoceros are now completely extinct in the area; the Crocodile is near-extinct; and the pride of the forest with a thousand legends, the Royal Bengal Tiger, is struggling hard to postpone its doom.

The grassy and scrub forests have always been the first victims of human covetousness. Most of the vast grassy plains of the Gangetic plateau and the scrub forests of Haryana and

Rajasthan, for instance, have been brought under plough, making near-extinct the four horned antelope, the hog deer and the ravine deer in the former area and the bustard, the chinkara and the black buck in the latter States.

The only forests that escaped total destruction, but not extensive damage, are the coniferous and the broad-leaved ones. They still exist in various states of preservation and possess the remnants of wildlife in their fastness. The chances are that wildlife may survive and propagate in the holds of these existing forests provided the Government makes a clean break from its present forest policy which, in essential points, is outdated by more than one century.*

Forest Policy:

The forest policy as practised today, notwithstanding the platitudes doled out to the contrary effect, could be summarised that forestry has no intrinsic right to land but may be permitted on sufferance in residual areas not required for any other purpose. And these forests, in the meantime, should be administered in furtherance of economic interest as commercial entities.

This antidiluvian concept, though in a modified form, found expression in the enactment of 'Indian Forest Act, 1865,[†] and again in a Policy Resolution of 1894. Though progressive in many respects, the Policy Resolution has its own failings. It directs that "Forests which are reservoirs of valuable timbers *should be managed on commercial lines as a source of revenue*..... (Para III, emphasis added) "Ordinarily, if a demand for culturable land arises and can be met from forest alone, it *should be exercised without hesitation*". (Para IV, emphasis added)

The above quoted paragraphs gave legal sanction for large scale deforestation. The all time low was reached during the World War II, when forests were indiscriminately felled and wildlife destroyed, far beyond their sustained production.

This made the Government sit up and take notice of the grave situation—and this time it was the National Government of Free India which assumed power in 1947. After long deliberations the new Government announced the National Forest Policy in 1952, which is packed with pious hopes and fine sentiments, but hardly offers anything that could stem the tide of deforestation. On the contrary it reiterated the 1894 policy with all its commercial slants and agricultural priorities which, though good in its own time, was hardly suited to the demands of prevailing conditions. In addition, the new policy correlated forests with the development of industries, communications, and river valley projects, opening them further for extensive exploitation and virtual destruction.

**Editor's Note:* The National Forest Policy of 1952 does state that 33% of the total geographical area of India should be under forests and in the hills it should be 66%.

†*Editor's Note:* The Indian Forest Act now in force is that of 1927 and as amended from time to time (thereafter).

The Working of the New Policy:

This additional strain on forests which were already groaning under the stress of earlier burdens, brought them and their denizens to the virtual brink of ruination. Within nine years, just nine years, the impact of the policy made V.S. Rao, the then Inspector General, of Forests, cry out in anguish. He said, that after the National Forest Policy, there had been continuous deforestation for distribution of land to the landless, river valley projects, plantations, grow-more-food schemes, and building townships. He wondered whether in view of these, it would ever be possible to reach the policy minimum of the land to remain under forests.

It was a guarded statement made by a responsible Officer in 1962; what had happened in the intervening period, is a tale of terrible devastation.

Development Project:

The single factor which contributed more than anything else to the wanton destruction of forests and wildlife in post-independence period is the development schemes connected with river valley and hydel projects. Instances of merciless clearance of vast areas of wildlife habitats are, tragically, many; it is unnecessary to count them one by one. In almost every place where a big dam has been built or is being built, wildlife has been eliminated. The disappearance of wildlife everywhere has followed the despoilation of forest, scrub, and swamps for development plans. And it is done with such scant regard for subsequent effects that in most areas the very purpose of the project is almost defeated. The Bhankra-Nangal Project is one outstanding example. Informed opinion holds that this giant reservoir is in serious danger of becoming useless in thirty odd years, which is only one-fiftieth of its stipulated life. It happened because the planners in their zeal (or ignorance) denuded the watershed and the catchment areas, of forest and vegetal protection leaving free the topsoil to wash into the reservoir.

The ill-effects of the disturbed ecosystem are plaguing the whole country in the wake of ill-planned projects. Our environmental and climatic conditions are being subjected to sharp deviations resulting in recurring epidemics, perennial droughts and floods; large scale land erosions; silting of rivers, lakes and dams; rapid advance of desert and dunes; increase in the velocity, volume and frequency of hot winds and cold waves; and fast deterioration of fertile land due to the increase in soil alkalinity and salinity.

And it is a vicious circle—the disturbed ecosystem aggravates environmental and climatic conditions which, in their turn, further disturb the ecosystem. And the cycle goes on faster and faster, making life more and more hazardous.

The Development Projects, no doubt, are the basic need of our impoverished country, but they need not necessarily run counter to the interest of natural resources. The difficulty arises when the project plans are conceived and executed with no consideration to botanical, zoological and ecological interests—but only to political and economic exigencies.

There have been instances where alternative sites were available. They could have easily saved both habitats and animal with minimal loss and without affecting the benefits from the development projects. But they were ruled out by politicians, hankering after votes and cheap popularity.

Afforestation:

A pious wish of our national planners is to rehabilitate our forests and increase its area from 17% of the present to 22% of the phased plan. This in itself (even if realised), is not much of an increase; but the way they are going about it, makes it a doubtful proposition. Let me cite an instance, though a bit old, nonetheless, typical.

A central Minister was invited to inaugurate Van Mahotsava (a part of afforestation scheme) by planting a sapling in a nearby town. He arrived at the place with the usual fanfare and, in the midst of thunderous clappings, he planted the sapling at a spot which was cleared for him by uprooting two majestic trees that had adorned the area for decades with grace and bountiful communion.

You might call it an exception. But, unfortunately, it is not. Similar vandalism, is an everyday affair—only on a countrywide scale. Miles and miles of beautiful *Sal* forests, in every State, are subjected to clear felling in order to make place for eucalyptus plantations—and all in the name of afforestation. Is it any different than the Minister's performance cited above? Surely the size and the extent of damage does not make it any the less ridiculous.

Large scale conversion of some of the finest natural forests into soft wood plantations of exotic trees has posed an imminent danger to the conservation of indigenous flora and, consequently, to the survival of fauna. The much-favoured eucalyptus trees neither afford shelter to the birds up in its branches nor any cover to the animals beneath. They neither bear fruit nor edible leaves for birds or animals. In addition, their plantation follows excessive free felling which destroys, beyond recuperative power, all under-growth and bushes—so vitally important for the existence of wildlife. The extinction of many forms of plant and animals life could be easily traced to a disturbance of the flora-fauna equilibrium by human agency. The instances are so numerous the world over and so well known that enumeration is quite unnecessary.

Afforestation of barren land is one thing, deforestation of rich forests for plantations another. We have vast tracts of deserts, uncultivable lands, in addition to great expanses of eroded soils like that in Chambal Valley, Kangra foot-hills, ravines in Uttar Pradesh—to name a few. Their aggregate area, even on paper, comes to more than 50 million hectares (almost equal to the area supposedly under forests today). Why can't the planners concentrate on such areas for eucalyptus plantation?

Live-Stock Grazing:

The oldest scourage of our land and its wildlife is the vast multitude of domestic animals. They are mostly unproductive, under-nourished and diseased, and yet are permitted to exist for reasons of sickly sentiment.

According to the 1961 census, we have in our country about 227 million cattle including buffaloes; 101 million goats and sheep, besides a little over 60,000 mules; more than one million camels; 1.3 million horses and ponies; and more than one million donkeys—leaving aside pigs and poultry. Judged from their recorded growth between 1956 and 1961, that is, 2% per year, these animals must have increased, even on non-compound basis, by more than 20% by this time. A large percentage of these animals—some entirely and others partially—live on grazing or browsing inside the forests.

Now, according to many a reputed naturalist, the carrying capacity of our major forest areas, including uncultivated lands, is so far exceeded by livestock alone that a substantial amount of existing wildlife could not support itself, even if it were effectively protected from shooting.

It order to earn revenue, the livestock is permitted to graze, unrestrictedly, in virtually all forests including reserve forests, sanctuaries and national parks. Apart from the serious damage to vegetation that the domestic animals cause, they carry infections diseases like rinderpest, brucellosis, anthrax and foot-and-mouth causing epidemics to wild ruminants. There are numerous records of gaur, wild buffalo, cheetal, sambhar, ibex and other ungulates contracting diseases from cattle and dying in large numbers, sometimes being wiped out entirely. The latest calamity of this type visited Siriska Sanctuary in Rajasthan where only recently almost the entire sambhar population, estimated at about two thousand heads, perished of a contagious disease brought to them by domestic animals. Now, where is the hope for wildlife to survive when, even in sanctuaries—‘the havens of hope’ of Dr. Karan Singh—they are not safe?

Wildlife Sanctuaries and Zoological Parks

We have, to date, forty-seven sanctuaries *including parks, strewn all over the country. (I have left out the Tirap Frontier Tract National Park, because it is largely unexplored). Some sanctuaries are large, others small, with a total area of around 4,700 square miles (1.2 million hectares). It works out to an average of 100 square miles per sanctuary, or in other words, a square of forest area of about ten miles by ten miles for each sanctuary. How many animals, do you think, this miserable parcel of land can contain and support? How can wildlife survive and propagate its species in such cribbed conditions?

You will say that the law of averages does not necessarily reflect the actual space conditions obtaining in sanctuaries. True; but it does reflect the comparative area on an All-India

**Editor's Note:* There are actually over a hundred wildlife sanctuaries and National Parks in India.

basis, and more than that, the callous attitude of our people in general and the Government in particular, towards our Precious heritage of wildlife.

It has been accepted even by the Indian Board for Wildlife (which incidentally, is presided over by Dr. Karan Singh himself) that the management of sanctuaries **need not involve suspension or restriction of normal forest operations**—(emphasis added). And what are the “normal forest operations”? Felling of trees for timber extraction; cutting of grass; collecting of fire-wood tapping trees; and, worst of all, grazing of livestock—to name a few.

By permitting ‘forest operations’ the authorities imply that sanctuaries are not expected to provide total protection to habitat, only to the fauna. But can fauna be protected without protecting flora?—Or, vice versa? They can both exist only in a state of equilibrium. The flora sustaining fauna is obvious to everyone; but not so the vice versa. It is the fauna that fertilizes the soil for the flora; weeds out the choking grass, crops away the strangling creepers, and stirs up the soil, as is done by pigs and rodents, to prevent moisture from rapid evaporation. I need not mention the role of birds, insects and bees in keeping the forests young and healthy by pollination, proliferation and scattering wide the seeds and seedlings.

The “forest operations” inside the sanctuaries (and also the forest) involve all sorts of unhealthy interference. The whole place gets crowded up with labour gangs, draught animals and carrier vehicles. One hears day and night, for months together, the rumblings of trucks, tractors and bullock carts above the din created by lumbermen with axes, spades and saws. Certainly these are not the ideal conditions for wild animals to live in peace! In the absence of silence and cover, the animals, even if they don’t flee the area, get inhibited in propagating their species. No wonder the young ones of all wild species are so few, and the rate of growth so slow, in all our forests, parks and sanctuaries:

Conclusion

It should be clear from the above discussion that ‘Poaching’ is *not* the main reason for the depletion of wildlife in our country. It could be a marginal reason that is being exaggerated out of proportion to find an alibi and side-track the main issue. Poaching is an illegal act committed on the sly and, not infrequently, with the connivance of local authorities. The very nature of this act limits its scope and curtails its practice. It should not be difficult to put an end to this minor problem of stray and illegal killing with the help of stringent measures enforced by efficient executive machinery.

The major problem is the wholesale killing which is sanctioned by the State. The destruction of wildlife habitats by submerging vast forest areas, or clear-felling of lush vegetation for colonization and agricultural schemes—is the *main cause* of the destruction of wildlife. It is the superficial thinking on the part of the Government which is responsible

for the vanishing wilderness and the decimation of wildlife—and not the much maligned village poacher who kills occasionally one or two animals, and that too, for the pot; not even the “gentleman” poacher who undoubtedly is a disgusting villain.

We can still retrieve the situation and save our precious heritage provided we urgently take the following measures:

(1) Enunciation of the National Wildlife Policy and the establishment of a National Wildlife Service—separate and independent of the National Forest Service.

(2) Complete break from the present revenue-oriented forest policy in favour of a conservation-oriented one: the conservation of natural resources of land and water, jungle and pastureland.

(3) Extension of forests to 40% of the total geographical area with extensive plantations of soil-suited flora.

(4) Establishment of more sanctuaries with a total increased area upto 10,000 sq. miles, in the first instance. All forestry operations, including grazing, should be completely stopped inside the sanctuaries and ten miles around.

(5) Blanket ban on shooting in all forests for twenty-five years.

(6) Introduction of animal and plant ecology as a compulsory subject in all schools and colleges.

(7) Formation of non-official ‘Conservation Societies’ on State and district levels; and encouragement to the existing ones with funds and recognition. The office bearers of all such societies should be invested with powers of forest officers.

A Short note on Shri S.S. Negi's Service Records

By

N.N. SEN,

Chief Conservator of Forests, Rajasthan (Retd.)

It is difficult to recollect correctly all the details of Shri Negi's service in the Forest Department, U.P., but as far as I remember, he passed out of the Forest College in Dehra Dun in 1925 and after short spells as Divisional Assistant in Chakrata, Saharanpur, Kalagarh & Lansdowne Divisions, was posted to the Pilibhit Forest Division in U.P. as an Extra Assistant Conservator of Forests. During his tenure as a Divisional Assistant Pilibhit Division, his duties mostly consisted of passing railway sleepers, and occasional marking of trees in the sal forests of Pilibhit division. He was later transferred as Assistant Silviculturist under M.D. Chaturvedi, I.F.S. His headquarters was then shifted to Nainital, which was also the headquarters of the Haldwani Forest Division. Shri Negi could make friends easily. He played tennis and bridge well and was in great demand at all social functions. As an Assistant Silviculturist he had to visit a large number of forest divisions and his circle of friends grew large. There was no club for Indian Officers at Nainital in the 'thirties' and Indians' social contacts were mostly confined to each others residence, by turn. In 1937, Negi was posted to Ramnagar Division as Asstt. Conservator for a short period and was engaged on the work of marking very important sal forests. For some years, Shri Negi was posted as Personal Assistant to the Chief Conservator of Forests, with headquarters at Nainital for six months and at Lucknow for six months. In 1946 (or 1947), Shri Negi was Divisional Forest Officer, Ramnagar division. Our contacts were resumed. I found no change in his basic character. He was as social and as helpful as before and made numerous friends, although he had periods of serious worry on account of the ill-health of his wife and his eldest son. In 1949, I was transferred from the Eastern Circle to the newly constituted Land Management Circle and took over from M.D. Chaturvedi, who became the Chief Conservator of Forests, taking over from W.T. Hall. As Conservator of Forests, Land Management Circle, I did some pioneer work in the afforestation of the ravines of the Jumna and Chambal rivers and roadside avenue plantations, developing a new technique, with the unstinted help in the allotment of funds by Shri A.N. Jha, I.C.S., who was then the Secretary, Agriculture & Irrigation in the Govt. of U.P. Previous attempts at the afforestation of Chambal ravines made in the Fisher Forests of Etawah, had largely failed. The portion planted under my guidance succeeded fairly well. Shri Negi took over from me in 1952 when I went away as Conservator, Western Circle. He continued to follow my technique in the afforestation of ravine areas and gained a great deal of experience in afforestation of waste-lands. In 1953, I took over as Conservator of Forests, Working Plans Circle. Sri Negi continued as Conser-

vator of Forests, Land Management Circle. When on 1st February, 1955, I retired, he was still holding the Land Management Circle. He continued to hold the post till 1956, when he was appointed as Chief Game Warden, U.P. During his tenure as Chief Game Warden, he organised a number of game sanctuaries, got a number of Game Wardens appointed and took vigorous steps in the protection of wild life and regulation of shooting. He successfully introduced black buck and cheetal in the surrounds of Sarnath near Varanasi and got some Gir lions introduced in a fenced area near Chandra Prabha Dam. The birth of a few lion-clubs was reported a few years later, but in recent years no lions are visible. They have probably died naturally or poisoned by the cattle graziers in the surrounding country. His experience as a Chief Game Warden was fully utilized by the Wild Life Preservation Society of India, Dehra Dun, on his return to Dehra Dun, when he retired from the U.P. Forest department. He became the senior Vice-President of the Society and remained so until his death.

In 1968, he was called by the Lt. Governor of Delhi (Dr. A.N. Jha) to help him in creating green belts, parks and woodlands in various localities and surrounds of Delhi. The degree of success, he obtained, can be seen in the woodlands, he created within a short period, in Hauz Khas, Tughlakabad, Kalkaji, Chirag Delhi, Dhaula Kuan and other places, and the green belts, parks and gardens along the Jamuna Bazar, Ring Road, Rock Garden (near Patel Nagar), North Ridge and other places. His sudden demise on 7th April, 1971, robbed the Delhi Development Authority of a very enthusiastic and energetic afforestation expert.

U.S.S.R. Baikal National Park.

The taiga around Lake Baikal in Siberia is being turned into the biggest national park in the Soviet Union and from this year its territory will be protected by the state, according to the Novosti Press Agency. The park project, drawn up by Leningrad scientists, will protect twenty-five million acres of forest, on which 336 rivers feeding Baikal depend.

The scientists plan to establish a big Baikal reserve in the estuary of the River Selenga, the main waterway which brings fresh water into this lake, the deepest in the world. The reserve will be for sable, marten, black squirrel, roe and musk deer.

Eleven reserves with a total area exceeding 1,250,000 acres will be established on the recommendation of game biologists. Larch, pine, elm and other varieties of trees are to be planted in steppe and forest-steppe areas.

Some 2,500 miles of roads will be built in the vicinity of the lake in the next ten years. Camping sites and hotels for tourists will also be built.

The Pygmy Hog. (*Sus Solvonius*)

By

J. TESSIER-YANDELLA, FRGS, FZS.

Writing in late 1969 Balakrishna Seshadri, in his thoroughly depressing, but most necessary book "The Twilight of India's Wild Life", in REFERENCE to animals "in much danger of total extermination" referred to "the pygmy hog and the hispid hare, both now feared extinct".

A short article in the June, 1971 issue of "Cheetal", dealt briefly with the reappearance of both these animals. This article seeks to place on record the circumstances leading to the rediscovery of the pygmy hog, to which that of the hispid hare was coincidental.

Background

Most authorities held the opinion expressed by Seshadri. So little was known of the pygmy hog that its status as extinct went more or less by default. Indeed the Red Data Book Published by the Survival Service Commission of the International Union for the Conservation of Nature Resources in 1967 listed the status category as 4 (a) ***, in other words the full species was critically endangered, but there was insufficient data available on which to base a reliable assesment. This is the maximum listing below known extinction. However, in 1970 this listing was changed, following a report by the writer through M. J. S. Mackenzie to the I. U. C. N., to 4(a), the stars being dropped, thus indicating the status as indeterminate only. The sighting upon which this change in status was based was incorrectly reported as being at Tezpur in Assam, where the writer was then stationed.

History

In the article referred to above, Pradeep Mishra makes reference to Brian Hodgson, and it was he who in a paper in the 1847 May edition of the Asiatic Field Society, Bengal, Journal entitled "On a new form of the Hog Kind or Suidae" made first mention of this animal. He stated that it must seem almost incredible that so tiny an animal should effectively resist man, but considered that the pygmy hog entirely escaped all notice due to its being confined to the deep recesses of primeval forest. In this conclusion, later events showed him to have been largely correct. He also made reference to "forest fires occasionally revealing the pygmy hog, when the herd is thus assailed at advantage"—an observation which became particularly apposite.

The scarcity of authoritative records during later years to the assumption of near extinction. The only authority to express opinion comparatively recently, as mentioned by Mishra, has been E.P.Gee, a naturalist of renown. It was in fact a conversation with Gee in 1965 which led to the writer's interest in the pygmy hog, and to its subsequent rediscovery.

Rediscovery

Gee had expressed his opinion, based on his discussions with various Forest Department officials, that the pygmy hog still existed in the Darrang District of Assam. In 1967, when the writer was posted to this district, tentative enquiries were begun. From a first authoritative statement to the writer by W. Meikeljohn, a retired Conservator of Forests, to the effect that he had many times seen, and indeed eaten, these animals in the Belseri area of Darrang, these enquiries rapidly became more and more interesting and exciting. They can briefly be listed as follows:

Date	Area	Source
1913.	Belseri	Meikeljohn.
1955-57.	Aie River, Goalpara.	} Gee, based on various reports.
1957.	Dhekiajuli and Hoograjuli.	
1958-59.	Rowta Reserve Forest.	
1969.	Manas.	Forest Deptt.
1969.	Majuli and Hattigor.	Chanda.
1970. Sept.	Majuli.	Sen Gupta—reported kill.
1971, Jan.	Rajgarh Reserved Forest	Graves—kill by Forest Dept.
1971, Feb.	Nonaipara.	Gilchrist—kill.
1971, March.	Manas.	Jankins <i>et al.</i> Oryx tour-photograph.
1971, March.	Attrekhat—Rajgarh Reserved Forest.	Capture. Graves.

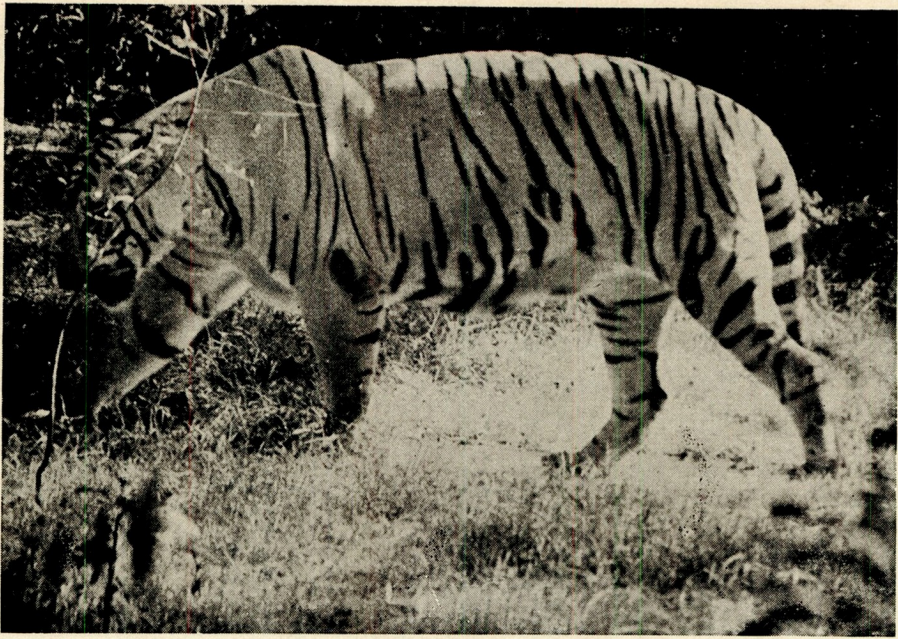
Of these reports, the most stimulating initially was that by Jit Chanda which directly resulted in the creation of a degree of local interest which had been lacking in my enquiries. Nevertheless, the preliminary had not been wasted. Plotting the reported sightings on a map, both in place and time, enabled a line of retreat to be displayed and consequent postulation of an area of probable survival. Events showed this to be correct. Stimulation of interest also enabled certain precautionary measures to be taken.

Following the extremely promising report by Chanda, Gerald Durrell, founder of the Jersey Wildlife Preservation Trust, had been informed of the probable continued existence of the pygmy hog. He had expressed his extreme interest, and promised his support in our endeavours to capture specimen and establish breeding colonies. Throughout subsequent developments he and his Deputy Director, Jeremy Mallinson, were kept fully informed. It was proposed to mount an expedition, in collaboration with the Forest Department and in conjunction with the Fauna Preservation Society, to study the ecology of the postulated environment, and to endeavour to make capture in the winter of 1970-71. However, events overtook us, and it was here that our precautionary measures proved our salvation.

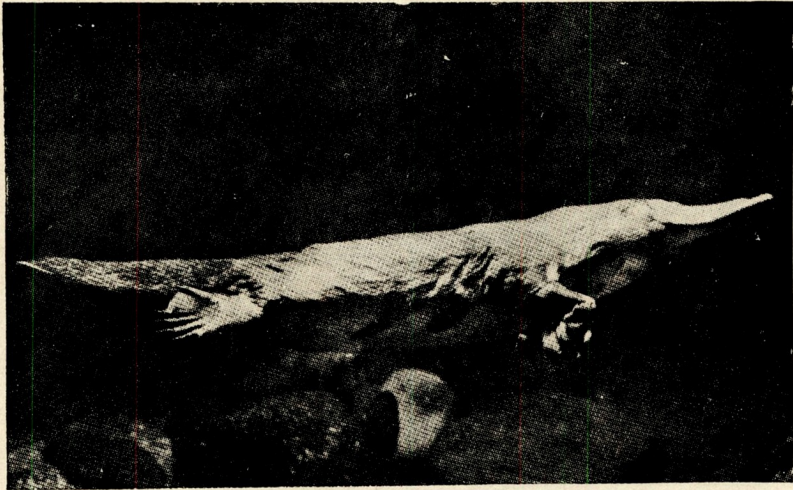
When conducting enquiries among local labour and villagers it had become apparent that the hog did in fact exist. However, the sole attraction of the little animal to anyone who happened to come across one was, entirely the prospect of a large and satisfactory



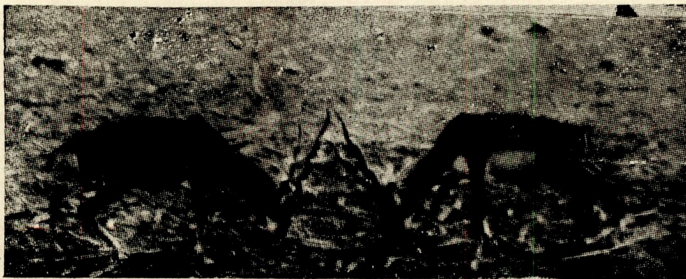
Pygmy Hog.



White Tiger.



Platypus



Blackbucks.

meal at the cost only of a little exertion. Here lies the reason for its apparent disappearance. Its extreme vulnerability to man. This had led it to retreat from its natural habitat which entirely corresponded to the incursions of civilisation. In promulgating our interest therefore, we had taken care to ensure the knowledge that comparatively large amounts would be paid for any undamaged specimens of the "nul ghari" brought in. In spreading this information Richard Grave of Attrekhat Tea Estate, adjacent to which was the postulated area of existence, was particularly helpful.

Capture.

During the twenty-four hours period 21st/22nd March 1971 an extensive fire, reputed to have covered approximately fifty square miles, occurred in the scrub jungle of the Rajgarh Reserved Forest adjacent to Attrekhat Tea Estate. Hodgson's observation was now shown to be true, and as a result of the promise of reward, pygmy hog were brought in, principally to Graves. Information was passed to me and I immediately went down and was delighted to be able to make positive identification. During the next few days more specimens were recovered, and at peak there were seventeen animals in hand. However inevitably, since method of capture were far from sophisticated, there were casualties. The first group with Graves, which formed the largest, comprised one mature hog, two immature males, two mature females, and four immature females. Later a further female was brought in. The two mature females were pregnant, as was the female which later arrived. Unfortunately one of those first caught aborted shortly after capture. The second gave birth later, but since it had been thought inadvisable to remove her from the sounder, her young died. The later arrival was kept separate and farrowed successfully. We were able to observe her young, but these also died after a period of days.

As a precautionary measure it was thought best to divide the sounder, and on 5th May four specimens, one hog and three sows, were taken to Paneery Tea Estate and placed in the care of Robin Wrangham. This step was taken to preclude the possibility of death by any virulent infection or other catastrophe.

Observation

Mallinson, under the aegis of the Fauna Preservation Society, visited Assam in May 1971 to collect data and to advise on the housing, feeding, servicing and general maintenance of the animals. Prior to capture the most reliable information for guidance had been derived from the last edition of Sterndale's "Mammalia of India" published in 1929. This proved very accurate, which is hardly surprising as the Editor drew for his knowledge on a captive specimen he had seen in the London Zoo. Such was its rarity at that time. It is however surprising that Bartlett's reminiscences as Superintendent of the Zoological Society's Gardens "Wild Animals in Captivity", makes no mention of the pygmy hog.

The pygmy hog is just that. A small pig. Height at the shoulder is under ten inches. Length from snout to base of tail is about two feet, slightly longer in the adult male. The ears are small and naked, The tail is small, straight and somewhat ratlike, and carries a few sparse hairs. The colour is rusty brown to black, and its body is covered with somewhat sparse, coarse and longish hair. A particular characteristic is that the females have three pairs of teats.

When surprised the animals move extremely fast, the males generally in the lead, with a somewhat high-stepping gait. If thought to be unobserved they move quietly and browse in an entirely unconcerned manner. They are extremely gregarious and tend at all times, to cluster together except when apparently unobserved when they still keep fairly close. When sleeping they pile themselves one on top of the other in a confused heap.

It has been reported in the past that the pygmy hog was thought to be nocturnal and to live in somewhat marshy habitat. Our observations do not seem to support this. It appears likely that the reputation for being nocturnal derives from a natural reluctance to feed during the hotter part of the day. It is entirely natural that, in an area where the mid-day temperature and humidity are both extremely high, the animals should prefer to feed as seems to be the case, in the early morning or towards evening and after sunset. Nor does it appear that they like a marshy habitat. They appear to prefer areas of dry thatch and scrub jungle. Indeed it seems that they retreat from areas which tend to become waterlogged after the onset of the rains towards the lower foothills.

Developments

As has been stated above we were unfortunate with the pregnant sows. Initially it was thought best to leave the two first brought in with the sounder. One aborted at about half term. The young of the second were probably overlain consequent on the sleeping habits. The piglets of the sow brought in later lived for some days. Contrary to reports they were not markedly striped like the young of the Indian Wild Boar. Only on very close examination could the rufous stripes be observed. The death of the young can perhaps be attributed to the very short duration of captivity before birth, and consequent anxiety of the mothers, apart from our total inexperience of these animals.

The precautionary division of the sounder had proved to be entirely justified. Those with Wrangham have received devoted care and attention from him and his wife. They are in very good condition. Most regrettably, circumstances did not allow of continued and uninterrupted care of these at Attrekhat. There were changes in personnel, and contributory lack of experience in animal handling. In consequence these animals have died. It is thought that a major factor in this regrettable occurrence has been the omission from their diet of necessary suppliments. It is known that in the feeding of all captive animals it is most necessary to provide suppliments of vitamins and iron, although the

required proportions are frequently in doubt. Lack of such supplementary diet, leads to loss of natural resistance and consequent vulnerability to infection and shock.

Conclusions

This exciting capture and the Oryx sighting has shown that the pygmy hog continues to exist, albeit in small numbers, in the area between Mangaldai and the Manas. It is possible that the animal in its retreat from the inroads of civilisation has crossed the border between India and Bhutan, and may well be established there in greater security.

The experience gained from the initial capture has been invaluable. Apart from pure value as regards the treatment and handling of future captures it has been indirectly responsible for the formation, under the direction of Richard Magor, of the Assam Valley Wildlife Scheme whose patron is Mrs. Indra Gandhi. The resources of this Association of major Tea interests will be called into action when a properly organised study of these interesting animals is instituted, as is hoped, in the near future.

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I am grateful to my planter friends in the Mangaldai area of Darrang, and in particular to Richard Graves and Robin Wrangham, without whose efforts this rediscovery would not have been possible. To Gerald Durell and Jeremy Mallinson for their continued encouragement, and to the latter upon whose paper to be published shortly in the Journal of the Bombay Natural History Society I have drawn for references.

Ethopian Wild Life and Natural History Society has been formed and publishes a Journal "The Walia."

Walia Ibex is Ethiopia's rarest animal with only one hundred and fifty left.

The number of tigers in the USSARITSK taiga has reached 130 according the scientists of the Soviet Far East. The increase is credited to protective measures taken by the State. A count of tigers was first taken 30 years ago when the number was estimated at 20-30.

Thakur Sohan Singh Negi

By

DR. A.N. DAS

Thakur Sohan Singh Negi was born in a middle class family of Pundir Thakurs of Dehra Dun. Negi is an honorific term used for people who are, in general, revenue collectors, money lenders etc. On the death of his father, the burden of running the household fell on the elder son, Devendra Singh who built up a property at 11, Cement Road, Dehra Dun. He was responsible for the education of Sohan Singh. Sohan Singh treated his elder brother like his father, and had great respect for him.

Sohan Singh had his schooling in Dehra Dun, and went to the Muir Central College, Allahabad, for his graduation in Science. He entered the Provincial Forest Service, U.P. on 1st April, 1925.

Devendra Singh, his elder brother, died in 1960. He left behind 6 daughters and two sons. The eldest son, Surendra Singh, is now a flourishing advocate at Dehra Dun. Of his 6 daughters, Rajeshwari Devi is married to Surendra Pal Singh of the U.P. Education Service, Maheshwari Devi is married to Govind Chandra of the Indian Police Service, at present D.I.G. of Police in-charge P.A.C.

Sohan Singh was married to Sewati Devi of nearby Ajabpur village. They have two sons and a daughter. The elder son, Virendra Singh is a Mechanical Engineer, in the Swedish Match Factory; the younger son, Narendra Singh is a Major in the Indian Army. The daughter Sushila Devi, is married to Vijai Bahadur Singh of the Indian Forest Service, who was till recently the Chief Wild Life Warden, a post which was occupied by his father-in-law, Sohan Singh. Sushila has done her M.A. in Sanskrit privately, and is working for a Ph.D. from Lucknow University.

All of Sohan Singh's children are very well settled and happy.

Official Career

Sohan Singh joined the forest Service on 1st of April, 1925 and worked as an Extra Assistant Conservator of Forests till 15th November, 1927, in Chakrata, Saharanpur, Kalagarh, Lansdowne, and Pilibhit Forest Divisions as an attached officer. This was followed by a spell as Assistant Silviculturist till 1st Dec. 1937. He then went to Ramnagar Dn. till 12th May, 1938. After this, he joined the Development Division and worked there till 1st June, 1940 and in the Utilization Division till 7th Oct. 1942. The year 1942 was one of political ferment. To be selected on 7th Oct. 1942, as the Personal Assistant to the Chief Conservator of Forests, a Britisher, was indicative of the confidence reposed in him. This was a rare distinction. He worked in this post till 1st Feb. 1946,

after which he went to the Dehra Dun Forests. This was followed with postings to the Fuel and Transport, Silviculture, Ramnagar Forests and Land Management Circles as Conservator of Forests till 6th Nov. 1952. He was confirmed as Conservator of Forests on 21st April, 1953 and selected as the Chief Game Warden on 16th Oct. 1953, which post he held in addition to that of the Conservator of Forests (Hd. Qrs.) till his retirement. He was responsible for establishing a Game Sanctuary—the Chandraprabha—for Gir lions. This was also an experiment to see if the species could be acclimatised to a new habitat. The Hailey, now renamed as Corbett National Park, at Ramnagar (Nanital) had been already established in 1935. Sohan Singh was responsible for making this a tourists' centre by building houses etc. at Dhikala so that tourists could 'shoot' the wild animals in comfort, with their cameras. He took a keen interest in the scheme of plantations at Vrindaban Govardhan started by his senior colleague Narendra Nath Sen, as a protective measure against the advancing desert which was invading North-western U.P. He was granted an extension of service till 15th Oct. 1958, when he should normally have retired on 15th June, 1955.

He went on leave out of India, with his wife, and visited U.K., France and Germany touring various places by car and combining pleasure with a serious study of the various forest administrations in these countries. He was on leave from 2nd April to 30th Nov. 1937.

After retirement, he worked as an honorary advisor to the Delhi administration on soil conservation, which necessitated monthly trips from Dehra Dun to Delhi. Narendra Nath Sen has now taken over this assignment since Sohan Singh's death.

He never neglected his official work in spite of his social commitments, and was often seen to be burning the midnight oil to keep up with red tape. He was extremely conscientious about his duties. He was loved and respected both by his subordinates and superiors.

Out of a total of 33 years of service, Sohan Singh remained in the routine of a general forestry post for about 6 years only. The rest he spent in specialised posts which were more to his liking and in which his talents were recognised.

Transcription of the Speech Delivered by Mr. Duleep Matthai at the Celebration of Tenth Anniversary of the World Wild Life Fund Held at India International Centre on 11th September, 1971

SUB:- Responsibilities of Industry to the Environment

Dr. Karan Singh, Ladies & Gentlemen,

Mr. Zafar Fatehally has explained the importance of this occasion.

2. I should like to add a new dimension to what Mr. Fatehally has said. When we look at what is happening to Wild Life in a broader perspective, in the context of the total environment, we are confronted dramatically and fearfully with the realisation that it is not wildlife alone that is threatened and being destroyed but that this threat exists today to all forms of life on earth—to animal, to vegetable, and equally to human.

3. It is my belief—and this thought undoubtedly will have occurred to a number of you, that contemporary man stands today at the cross roads of human history, at a historical water—shed, at the great divide between what is now, and what may be, the never, and that upon us rests the fearful responsibility of reassessing the very goals that have till now made for human progress, and of reordering our lives to new ends of human happiness.

This may sound an over-dramatization of our contemporary situation. In the past, there have always been those in every generation who have prophesied that the day of reckoning was at hand and that catastrophe and doom were the imminent prospect for all mankind, and who have subsequently been proved fools, or knaves, or both. And perhaps those of us who think as I do, may be proved so too, but I don't think so. There is greater evidence today than ever before that we are headed on a collision course. The human race and human activity have reached such enormous proportions, and human progress as we understand it, is accelerating at a rapid pace. Unless we, in the current generation, in the house and current century, can take stock of ourselves, our resources, and the power we now and command, with a sense of destiny show the foresight and ability to recast the human value systems that have made for human progress from the dawn of civilization, we may set in motion forces that will destroy the very matrix of the systems of Nature that hold our environment—together.

4. It is against this wide canvas that I should like to come to the particular subject on which I have been asked to talk. In the context of the responsibilities of Industry to the environment, what are the major factors affecting the environment? Broadly speaking these are:-

1st Resource depletion—that is of mineral, soil and vegetative resources including forests;
 2nd Biological pollution—brought about through animal and plant pests, and through human agency.

3rd Chemical pollution—from industrial effluents, air pollution, indiscriminate use of pesticides and insecticides, fertilisers, detergents and the like.

4th Physical disruption to the environment including geophysical disruption, resulting from silting and other forms of soil disturbance, Noise and Thermal pollution;
 And not the least.

5th Human social disruption resulting from growing urban conglomeration following the disturbance of social communities which give rise to deviant social behaviour.

5. The danger to the environment from all these causes is mercifully being recognised the world over with increasing anxiety, and corrective action along with deep scientific study is under way by national Governments and by Private Agencies.

6. As an amateur Conservationist I do not propose to take advantage of this platform to point accusingly at industry for its lack of environmental consciousness, Particularly since in India we are not yet plagued by environmental problems now besetting the industrially advanced countries. But as someone who has a foot in both camps, I would like to express the firm belief that there is no more time to be lost for industry in this country, and if I may suggest Government also, to take stock of our fortuitous situation and reassess our growth and development priorities against yardsticks of environmental consequences, and charter anew our course for the future.

7. In its own interests, Industry must reassess the costs of serving the community in the future. It is no longer enough for industry to think in terms of its responsibilities—as producing efficiently, growing, making profits, providing good working conditions to its employees, producing quality goods and marketing these honestly. Every industry today faces the prospect of the challenge of fundamentally new economic and social responsibilities involving the assumption of a burden of greatly increased social costs, of the responsibility to regard the resources from which it draws its raw material with a greater sense of civic concern, of operating its productive capacities without contaminating the surrounding air, the soil and the water, elements that they have hitherto considered open to unrestricted use, or misuse. Above all of treating these elements as the precious inalienable right of the entire community, including Wild Life, to enjoy in their pure pristine condition.

8. Unhappily environmental ecology and current economic goals are mutually exclusive. The economics of growth and profitability which is the very foundation of all industrial policy today will ultimately be limited by saturation and resource depletion, and lead to decline. It is in this context that I would like to venture the suggestion that industry's foremost responsibility therefore today is to evolve a new industrial philosophy to validate the role it can assume in the future.

9. Industry must recognise the inevitability of the need for an ecological validation of its present activities and future development projects. Our Government has, farsightedly, accepted as a declaration of policy the need for such an approach, but the practical means of putting it into effect have not yet been spelt out. Industry must anticipate Government by doing this itself.

10. Of immediate importance, of course, is that Industry must accept the self-discipline of eliminating or reducing substantially its contribution to environmental pollution, not only in its productive processes but also through accepting the need for recycling solid wastes and using indisposable containers to conserve natural resources.

11. Then there has for instance been remarkably little consideration given to the long term implications of total market saturation. This is an imminent problem for an increasing number of industries as is clear from the widening gap between sales and factory capacities and inventories, particularly in advanced countries. The most dramatic example of this today is the case of the International Airlines. Many people believe that the current economic plight of the airline industry developed suddenly, that it was due to the unforeseen collapse of demand in 1970. This is not true. Figures from the Air Transport Association of America show that airline capacity has far exceeded demand since 1955, and that capacity has been outstripping demand by a progressively widening margin in the last few years. The annual load factor fell from 53.0% in 1966 to 49.9% in 1969 and has since fallen further as a direct result of the accelerating growth and development of commercial aircraft production. The airline industry today is in serious difficulty and considerable losses are predicted both for 1971 and 1972.

12. I would like to suggest certain responsibilities that Industry can assume to be of direct and immediate help to the cause of conservation which is what we are directly concerned with here today.

13. Foremost, I would like to propose the adoption by Industry of a specific corporate policy to refrain from business activity that directly contributes to the destruction of wild life and also, to the extent possible and feasible of wild life habitat areas. Worthy of emulation is the fine example set by Pan American Airways which from the 31st of August this year has decided upon a policy of not accepting tours involving the killing of animals classified by the World Wild Life Fund as endangered species. Mr. Najeab Halaby, President of Pan Am, on a visit to Delhi recently, stated that his airline had entered into an agreement on this basis with the World Wild Life Fund, in keeping with the Company's efforts to improve the environment and advance the cause of Conservation. Mr. Halaby is reported to have stated that Pan Am, apart from refusing to book such tours, would also not sponsor any brochures encouraging the killing of endangered species.

14. Since our cause can only succeed through the widest awakening of the public conscience against wild life destruction, this I would suggest is an area in which Industry

could assume a vital responsibility. In the considerable advertising campaigns that Industry employs today, a bye-line appealing for wild life preservation would have substantial value. Where possible, company's sales promotion advertising campaigns could be developed with no loss of sales appeal, on a theme of wild life conservation. Some remarkably fine work to help the cause of conservation through advertising campaigns has been done in India during the past year by the Chloride & Exide Batteries (Eastern) Ltd., but their efforts need substantial reinforcement.

15. Of direct help to us in the World Wild Life Fund would of course be direct financial support to conservation projects we have, after careful study, determined as requiring immediate implementation. Our efforts cannot be expanded without far greater resources than are currently available to us—financial or otherwise. I must acknowledge here the already most heartening response from some quarters in private Industry, particularly from the House of Tata, which helped launch the WWF—Indian National appeal.

16. With its great managerial and technical skills, Industry can assume responsibility for leading a number of important conservation efforts. A well planned and action oriented approach is critical to success and in this country where ecology and conservation, as we understand these subjects today, are largely uncharted, the entrepreneurial managerial and technical skills of industry, particularly of private industry, would be invaluable.

17. The scientific study of ecology and conservation in this country is still in its infancy and requires considerable support. Industry could found chairs in Universities for the study of these subjects. It is essential that ecology and conservation should be taught as specific disciplines in India and that youth should come to recognise the serious importance of these subjects.

18. I would like to strongly commend, particularly to private industry in this country, the example of certain prominent industrial groups abroad which, recognising the vulnerability of wilderness areas, and areas that constitute unique undisturbed eco-systems of great natural scenic beauty, have sought permission and bought these areas and vested them in Government as National Heritage Areas to be retained in their pristine condition. Industry has also bought over and gifted to Government so called waste lands for conversion into recreational areas where the emphasis will be on the enjoyment of Nature. In India, the management of such areas could be the joint responsibility of Government and Private Industry—representing truly a joint sector in the finest sense of the term. Such a move is very worthy of consideration by the large Industrial Trusts that exist in this country, and Government should permit the use of Trust funds for such purposes.

I have already exceeded the time allowed to me but before I close, I would like to use the occasion to appeal to the Captains of Industry, to the great entrepreneurs of this country, the innovators, the great administrators who head Industry in both the Public and Private Sectors to use their great technical, and managerial skills and resources to help us before it

is too late, to preserve for posterity what has meant so much to all of us and to our forebearers and which will provide those essential ingredients that will make for the quality of life for future generations.

Fur Trade Co-operates for Wildlife.

The five-year ban on all trading in the furs of five endangered species—tiger, clouded leopard, snow leopard, giant and La Plata otter—and the three-year ban on leopard and cheetah, agreed between IUCN (International Union for Conservation of Nature) and the International Fur Trade Federation has come into effect on September 1, 1971.

Crocodiles Face Extinction.

All crocodilians—alligators, caimans, crocodiles and gavials—face extinction if the present rate at which they are being depleted is not arrested. Depletion is greater than their reproduction capacity. This was the conclusion of the new IUCN Crocodile Group, a small group of specialists from all over the world, which met for the first time in March this year in New York.

Negi As An Ardent Conservationist

By

C.L. BHATIA

I have known "Dada" Negi as the late Shri Sohan Singh Negi was affectionately called, since 1947 i.e. the year I joined the Indian Forest College at Dehra Dun as a trainee. I was, at that time, representing the North—West Frontier Province now in West Pakistan, but after partition I was absorbed in the Uttar Pradesh Forest Service. While in Dehra Dun, I called on the Divisional Forest Officer, Dehra Dun Division, Shri C.M. Johri and the Divisional Forest Officer, Saharanpur Division (now called Siwalik Division) Shri Suraj Bhan Bhatia and both asked me, amongst various other things, if I had met Negi. I told them that I had not met him so far, but asked them to tell me why they were so keen that I should meet him. They said that both of them were due to retire soon and amongst my seniors in U.P., he was the only man on whom one could rely upon for any help and advice. I was, therefore, very keen to meet Dada Negi. Dada Negi belonged to Dehra Dun but since he was not posted there, I could not contact him even though he must have visited Dehra Dun during the period I was in the Indian Forest College. The first time I met him was in 1949 when I was posted to Nanital as Assistant Conservator of Forests, on completion of my training. He used to live in one of the best houses of Nainital right on the Mall Road and I went to his house straight from the bus stop. I can never forget the affection with which he received me. I was greatly impressed by the style in which he was living. He straightway asked me if he could be of any help and assistance. At that time he was the senior most Divisional Forest Officer and I was just a beginner. I must admit that my first meeting with him has been of immense benefit to me through out my career. I vividly remember his first bit of advice that a forest officer must possess four things, a wife, a car, a gun and a radio. I followed his advice and within the next two months bought a car and a radio. A years later I purchased a gun and the following month married.

One day I met Dada Negi in the Club. I was sitting in the lounge and was scanning through some magazine. As soon as he came I got up and he promptly remarked "Don't get up for me, I am not a lady". I sat down and he occupied the chair next to me. He was very fond of playing bridge and asked me if I would join him. I told him that I did not know how to play bridge but he forced me to play and made me loose five rupees at an anna a point. I felt bad at loosing so much money (in those days five rupees was a lot of money) but he was very happy about it, for, after the game I told him that I am going to learn to play bridge and would play daily. I requested him to be my Guru and believe me, during my association with him for 22 years, I always treated him as such. His house was open to all and everybody ran to him for advice whenever

necessary. I called on him whenever I was in difficulty and he was always ready to help even if he had to go out of his way to do so. At one instance I know he picked up a row with a very high official as things were not done the way he wanted. He was a great fighter and can be aptly called the 'Lion of Uttar Pradesh' (This was what many people started calling him when he would fight for his right and win the battle). He won many battles not one. It was at his instance that the U.P. Government created a separate Wildlife Department with Dada Negi as its first independent head. He was an ardent lover of wildlife and he could no longer tolerate the way wildlife was being treated. He put forth many proposals before the U.P. Government and most of these were accepted. The most important of these was the introduction of Gir lions in the forests of Uttar Pradesh. He was responsible for selecting the Chandra Prabha area as the second home for Gir lions. At that time I was the Divisional Forest Officer, Varanasi and Chandra Prabha was within my territorial jurisdiction. This was the first time that I worked under him and this was the best period of my career. Dada Negi and I chalked out the whole scheme for transplanting the Gir lions in the Chakia forests of Varanasi Division in Uttar Pradesh. We were quite aware of the responsibility we had taken upon our shoulders as it was the U.P. Government which had made the offer to the Executive Committee of the Indian Board for Wild Life at its meeting at Sasan Gir in 1956 to find an alternative home for the Gir lions which were fast declining in numbers. We knew of the first attempt made at implanting lions by the late Maharaja Sir Madho Rao Scindia of Gwalior, a few decades earlier. This had not been successful. But this did not deter Dada Negi and he went ahead with full gusto. Within a year, necessary arrangements were made and on December 2, 1957, one lion and two lionesses were released in a ten acre enclosure constructed inside the main fence. On January 8, 1958, the inner enclosure was dismantled and the lions were set free in the sanctuary area. They started multiplying and their number increased to four in 1958, five in 1960, seven in 1962 and eleven in 1965. Dada Negi had successfully translocated the Gir lions and he proved that the Chandra Prabha area of Chakia forests, with its open scrub and bamboo forests was quite suitable for their second home. The lions subsequently disappeared but whatever Dada Negi had done to translocate the Gir lions has shown that another attempt can be made in the same area or in similar areas if the following points indicated by Dada are borne in mind and strictly followed:—

- (a) A minimum area of not less than 110 to 210 sq. miles should be selected. It should not be in a narrow strip and should be of sufficient depth;
- (b) All cultivation and grazing inside the area should be prohibited;
- (c) The area selected should be closed to shooting and grazing at least three years in advance;
- (d) Adequate number of salt licks and water-holes should be provided;

- (e) Larger carnivores should be eliminated, as far as possible. This is necessary to protect the lions as well as conserve game to provide natural food for the lions;
- (f) Live baits should be tied at suitable spots regularly for a considerably long time. In the meantime, a cheetal farm should be established in the vicinity of the sanctuary. Once the farm is established, the cheetal may be released in the sanctuary as prey for the lions;
- (g) Necessary protection should be afforded against poaching and poisoning by villagers. In case a domestic animal is killed by a lion, adequate compensation should be paid to the villagers so that they may not regard the lions as their enemy.

The Executive Committee of the Indian Board for Wild Life at its meeting held at New Delhi on the 29th October, 1971 has, decided to find a second home for Gir lions and Shri R.S. Dharmakumarsinhji has been requested to select an area where the lions can be translocated. I am sure, that Shri Dharmakumarsinhji will succeed in finding a second home for the lions and the work started by Dada Negi will be successfully completed by him. This will be the best tribute to Dada who loved wild animals.

Dada Negi has been very actively associated with the beautification of Delhi and was an Honorary Advisor to the Delhi Development Authority for several years. He is responsible for most of the greenery which we see in and around Delhi. Whenever he was complemented on his achievements, he would reply that these, parks and plantations would look more beautiful if they have some wild animals also. With this in view he took me to Haus Khas area in Delhi where a beautiful picnic hut has been built amidst a man-made forest. A Deer Park has also been started and he was working on a lake to house some water birds when he was suddenly taken ill. I used to visit him in the hospital. Even when he was gravely ill, he told his wife that I should be looked after. He offered me a drink and said "Look, what I want in Delhi is a Lion Park also". Dada's word keep resounding in my ears. I am working on a scheme to have lions in some open and specious area round about Delhi and I hope what Dada Negi desired will be achieved.

Kill and be Killed

By

M.V. MAKKI

The author of "Why preserve Wildlife" says that "The so-called cradles of civilisation in the Middle East were once forested and fertile lands abounding with Wildlife. What are they now? Merely desert, because the people there did not conserve nature." They killed wild animals and birds which acted as agents of pollination and distribution of plant seeds. They cut down trees without taking care to plant new ones. Absence of forest meant absence of condensation of vapour resulting in scanty rainfall. Agriculture was effected. Even grasses dried up. People could not get enough food for themselves and their animals and so migrated to other places deserting the area. Erosion of land occurred and the desert crept in.

Sven Hedin, the Swedish explorer, found a city near Khotan in Central Asia at the edge of the Taklamakan desert. He found evidence of heavy wooden beams used in the construction of their houses. Evidently the city was in the midst of, or near a big forest. The people there might have acted in the same way as those of the Middle East and met the same fate.

To quote a more recent example, the KAIBOB TRAIL near the Colorado River of North America had a big forest. The deer of the area were protected by law, not so the Mountain Lion, a leopard-like animal, as it was considered vermin, a destructive creature. Hunters killed it off completely for its beautiful pelt which fetched a good price. The controlling factor of this carnivorous animal being thus removed, the deer of the place multiplied beyond limit and ate up the aspen *Populus sp.* plant, their usual food, to a greater degree than before. This resulted in the drying up of fir and spruce saplings which grew up in the shelter of aspen. As there were no young trees to replace the dead and decaying ones, the forest dwindled and this resulted in a diminished rainfall which brought in its train a lesser undergrowth. The deer now began to starve and die for lack of food. These things did not happen in quick succession and took a considerable time but the end had begun. Man's interference with the Balance of Nature brought disaster, after disaster. Now men of the Red Indian Reserve who were living near the forest could not get enough water for their agriculture. This added to the lack of fodder for their animals and drove them to better lands. So a situation arose that no Mountain Lion meant, no deer, no forest, no rainfall and no man, a chain-reaction indeed.

Many plants depend for their dispersal of seeds on animals and birds. Some stick to their fur, some with their sticky mucilage attach themselves to the mouths of animals and

beaks of birds, and then are brushed aside, far from their parent plants. If one walks through rank vegetation without shoes but with socks on, one would find how many grass seeds, gluey and hooked ones, attach themselves to the socks. Some seeds pass through the digestive canal of animals and birds without being digested and come out with their droppings. In this way seeds travel away from their parent tree, for, the small piece of land under the tree where they may fall cannot provide them enough nourishment, sun and free space to spread and grow as big as their parent tree. The beasts by passing through the undergrowth also shake up the plants, thus releasing the pollen which falls upon the flowers of their own or other plants thus helping in their self-and cross-pollination. Some small birds like the humming birds and rosy pastors directly help in the pollination by flying from flower to flower in search of honey, like the honey-bee. On my request, Dr. T.S. Mahabale, Head of Botany Section, Poona University, considered an authority on Botany, has kindly sent a list of plants which almost entirely depend on animals and birds for the spread of their seeds. Here a few examples are given; seeds of *Compositae*, *Amaranthus spinosus* stick to skins of animals. Seeds of *Loranthus*, *Cordia mixa* stick to hoofs of animals. *Ficus bengalensis*, *Ficus religiosa*, neem pass through the intestines of animals and birds and come out intact far from their parent plants. *Isocites*, *Mareilea* and *Ottelia* stick to the feathers of birds. What would happen to these plants if birds and beasts are wiped out ?

Wildlife, forest, rainfall, man's cultivation and man himself are inextricably related. They are links in the same chain. If one is disturbed others are effected. What happened to the small communities in the past as a result of neglect for the continuation of the flora and fauna of the land, will happen in a general way to the whole of mankind.

A speaker had just made a declaration: "I hate all dams—large and small."

From the back of the auditorium, some one asks, "Why are you Conservationists always against things?"

"If you are against things," replies the speaker, "you are for something. If you are against a dam you are for a river."

Sohan Singh Negi

By

N.B. BONARJEE

Sohan Singh Negi and I met occasionally in our service days, but only casually. His work lay largely in the forests of the Kumaon Division, while the forest districts in which I served were in the opposite direction, in the Faizabad, Gorakhpur and Benares Divisions of Uttar Pradesh. It was not until I settled down in Dehra Dun after retirement that our slight acquaintanceship ripened into a friendship that lasted until Negi's sad and untimely death in the early months of 1971.

We met in Dehra in the hot weather of 1961, and that, too, by chance in Hamer's shop, he an old resident of the city and I a new-comer. We had a lively discussion on the merits (and demerits) of the contents of the various bottles we were both examining with interest, and what could be better starting point for a friendship than that? For Sohan Singh was by nature a friendly soul, who found it easier to make friends than enemies, always cheerful, and with a sense of humour, always ready with a smile rather a frown, always at hand to help his friends if ever they found themselves in difficulties. He bore his years well, and was out with his gun every week-end in the shooting season. It was a great shock to me on return from Mussoorie at the beginning of the cold weather of 1970 to learn that he had developed the signs of the fatal disease that was to carry him off a few months later. He had, I think, a premonition of his coming end when he was taken to hospital in Delhi, but he died as he had lived—with courage. By his sad death Dehra Dun has been deprived of one of its oldest and leading citizens. The forests, with their game, big and small, have lost a vigorous defender and protector; The Wild Life Preservation Society a staunch foster-father and supporter; and for myself I have lost a valued and sincere friend, whose memory will remain with me for the remainder of my time.

The International Union for Conservation of Nature and Natural Resources will hold its 11th General Assembly and 12th Technical Meeting at Banff, Alberta, Canada from September 10 to 16, 1972.

Wildlife Conservation in East Africa

By

G.S. RANGANATHAN

I was in Kenya from the 5th to the 10th February, 1971 and during this time, besides attending to the business which took me there, I visited the Amboseli Game Reserve, the Nairobi National Park and Lakes Naivasha and Nakuru. I also met and spoke to several people interested and actively engaged in promoting conservation.

In Nairobi I called on Mr. Michael J. Sawyer, Chief Executive of the East Africa Wildlife Conservation Society whose excellent magazine *Africana* I have been subscribing to for a couple of years. The East African Wildlife Society, a non-profit making, non-Government, conservation organisation was founded in 1961 to watch over the interests of wildlife in East Africa. The Society's office is at the Hilton Hotel in Nairobi.

There is also The East African Wild Life Journal published annually which contains papers on all aspects of research in East Africa, accounts of behaviour, immobilisation and diseases of large mammals, as well as detailed ecological papers. Work on fish, birds, reptiles, insects, and vegetation is also included.

I bought from the Society a copy of: *A Field Guide To The National Parks of East Africa*, by J.G. Williams (45 s) who was formerly Curator of Birds at the Coryndon Museum in Nairobi and who now runs the Wildlife Advisory Service there. He is a leading authority on African birds. I already had with me his *Field Guide To The Birds Of East And Central Africa*—loaned to me by my friend Mr. Owen Martin. Both these books are very good and the latter helped me identify 75 species of birds.

I had an interesting chat with Mr. Sawyer who suggested that I visit the Amboseli Game Reserve instead of the Serengeti National Park as the latter being so famous was extremely crowded on account of diversion of tourist traffic from the Uganda parks consequent on the political trouble there.

Mr. Sawyer thought that it was well recognised that the National Parks and Game Reserves earn a lot of valuable foreign exchange for the East African countries. His only fear was that if oil was found in any of the parklands, that might be the end of wildlife there.

Mr. Sawyer gave me an introductory note to Dr. Wendell Swank who was doing valuable work in the East African Agriculture and Forestry Research Organisation at Kikuyu on the road to Lake Naivasha. Unfortunately, it was not possible to get in touch with Dr. Swank on the telephone and consequently when I visited the institute Dr. Swank was away. However, I met Mr. Allen D. Tillman, Head, Animal Production Division. Mr. Tillman is a Professor in the Animal Science Department at Oklahoma State University and at present on an assignment on behalf of the Ford Foundation. It turned out that

Mr. Tillman was going to be in Bombay en route to the USA in July '71. I requested him to give us a talk at the BNHS and he kindly agreed to do so. He subsequently wrote to say he would speak on Game Utilisation and indicated July 2, as a date suitable to him.

On the 6th morning, we motored from Nairobi, leaving at about 8 in the morning and reached the Ol Tukai Lodge inside the Reserve (approx. 140 miles from Nairobi) at about 11.30. From the time we entered the Game Reserve about 40 miles from the lodge, we had a glorious view of snow-capped Mt. Kilimanjaro (19340') and its humbler neighbour Mt. Meru (13000'). The mountains provide a dramatic backdrop to Amboseli. In the morning until about 10 a.m. at this time of the year, the clouds nestle at the base of the mountains and the peaks are exposed. Later the clouds rise and hide the peaks, but settle again late in the evening when mighty Kilimanjaro is seen once more towering over the plains. Like the Taj Mahal, Mt. Kilimanjaro is a gorgeous spectacle at all times of the day and in moonlight.

After a wash and lunch we set off along with a ranger in our car for Lakes Engoni Naibor and Loginya swamp. The afternoon was hot and the tyres raised clouds of fine dust. I remembered David Western's article on Amboseli (*Africana*, Vol. 3, No. 12, '69) in which he says that tourist vehicles add to the severe erosion caused by the Masai cattle (which have increased dramatically in number after rinderpest inoculation). We saw elephant, black rhinoceros, Masai giraffe, wildebeest, Thomson's and Grant's gazelle, Kirk's Dik-Dik, Yellow baboon, Burnchell's zebra, warthog and several birds. The most rewarding sight was that of a dignified cheetah which allowed us to drive close to it, but when half a dozen other cars and minibuses encircled it, it sauntered away in disgust. We also came across a crowned lapwing (which is very much like our red wattled lapwing) which bravely continued to sit on its clutch of eggs allowing several cars to approach within 4 to 5 feet of it before it protested, but after wheeling briefly, it once again returned to its eggs which were so well camouflaged that they were barely visible. Lions we did not see on the first day but early next morning on our chakkar came across two lionesses, one in the act of stalking a wildebeest which appeared to be aware of her and grazed unconcernedly while moving away. We also saw several Kori bustard sharing the meadow with gazelles and wildebeest.

At Amboseli I had a useful and pleasant talk with Mr. Brian J. J. Figueirado, Warden and his assistant Mr. Joel Ole Kores.

Mr. Figueirado, prior to his appointment as Warden, was in charge of game control in the Northern Frontier District, and his work consisted, besides other things, of killing man-eaters. During the troubled days following independence when there was warfare on the Kenya-Somalia border, a lot of game was indiscriminately shot. This in addition to easy human flesh made available by warfare created man-eaters.

The Amboseli Game Reserve has an area of 1259 sq. miles. It has five main wildlife habitats, plus a dry lake-bed, Lake Amboseli, from which it takes its name. There are open plains; extensive stands of yellow-barked acacia woodlands; rocky, lava strewn thorn-bush country; swamps and marshes. Wildlife, however, is concentrated in the eastern half of the Reserve around Ol Tukai, an area of about 30 sq. miles.

There are 25 rangers for the whole Reserve which has two Land Rovers and a truck. There is radio communication with the Gate and mobile units report frequently. In spite of precautions, about 16 rhinos are killed every year by Masai moran (young warriors) who spear the animal to impress their girl friends. Since only 12 rhino approximately are born every year, the rhino population of 60 is declining.

To quote from The Field Guide To National Parks Of Eastern Africa, "The distinction between a National Park and a Game Reserve, broadly speaking, is that in the former complete protection of fauna and flora is the paramount purpose and human utilisation of the land is precluded. In the Game Reserves, preservation of wildlife is a primary purpose but human activities such as grazing of cattle are sometimes allowed".

The National Parks created by the Central Government function autonomously through a Board of Trustees. The Game Reserves come under the County Councils.

National Parks have better resources—they pay better salaries to their staff and are better organised than Game Reserves. A warden in a National Park may be paid as much as 2500 shillings a month; in a Game Reserve perhaps 1500 to 2000. The salaries at all levels including those of rangers are comparable to industrial scales. A ranger is available to accompany a tourist party for a charge of 10 shillings (for approx. 2-3 hours) of which he is permitted to keep 2 shillings.

The drive from Nairobi to Lakes Naivasha and Nakuru is breathtakingly beautiful especially when the road descends into the Rift Valley. There are some lofty Cactus trees which look like gorgeous, gigantic candlesticks against the cerulean sky. The temperature, which in Nairobi (6000') is cool, gets noticeably warmer during the descent into the Rift Valley and Nakuru was quite warm in the noon-day sun.

Lake Nakuru approx. 24 sq. miles in area and the first National Park in Africa to be set aside for birds, is a couple of miles from Nakuru which is a fairly large, and well planned town, with modern buildings and attractive tree-flanked avenues.

Lake Nakuru is a shallow alkaline lake in Kenya's Rift Valley about a hundred miles from Nairobi, famous for the large number of lesser and greater flamingos usually to be found there as non-breeding visitors. There are also quite a large number of White pelicans. Nearly four hundred species have been recorded both of water birds and those species which favour the habitats surrounding the lake.

As we entered the Sanctuary we saw Reedbuck and approaching the lake we saw from a distance a wide band of pink efflorescence on the water which, when we got closer, turned out to be thousands of flamingos (Lesser more than Greater). Although the Guide book says these birds are non-breeding visitors I thought there were several young and immature birds, especially close to the shore.

The flamingos feed on a blue-green algae called *Spirolina* and it is estimated that they consume not less than 150 tons per day of this algae, but there is no danger of the algae being eaten out. In addition to the flamingos there are small fish, *Telapea Grahami*, which eat this algae and in turn are eaten by the 8000 or more White pelicans. The pelicans' daily catch of these fish is reckoned to be at least 15 tons.

Lake Naivasha, about 50 miles from Nairobi, is said to be the most beautiful of Kenya's Rift Valley lakes. It is a very large fresh water lake approximately 100 sq. miles in area, with fringing banks of feather headed papyrus reeds and water lilies. It has an island in it called the Crescent Island.

There is a beautiful main lodge at the Crescent Island Sanctuary, one of the nicest I have seen; a long, low, thatched log cabin simply and artistically designed (with lounge-cum-bar and dining room) with smaller cabins around for people who wish to stay overnight.

We spent several serene hours in a boat with an outboard motor chugging away on the lake and ate our sandwiches on Crescent Island. There were quite a number of pleasure boats about and fishing is a popular sport. Sudden squalls are not infrequent on Lake Naivasha and people are cautioned to head for shore immediately there are signs of one. I got some good photographs of White pelicans perched on very ornamental trees that looked like bleached driftwood. Another remarkable bird seen was the Goliath heron, an impressively large edition (5' tall) of the Purple heron. A Malachite kingfisher gleamed like a jewel perched on a dark green reed. The hoi polloi was made up of Red-knobbed coots, galinules, African cormorants, darters, dabchicks, egrets.

The Nairobi National Park, approximately 44 sq. miles mainly of open plains area with a river flowing through it, is on the outskirts of Nairobi and is like Whipsnade Zoo on a gigantic scale. We wanted to see lions and the man at the Gate who sold us an excellent map of the park (5 shillings) told us that a party of five or six lions could be seen in Sector 19 alongside the road on a wildebeest kill, and sure enough following the route carefully we got to the lions (four lionesses) one of whom paced alongside the car down to a stream for a drink.

En route to the lions we saw large numbers of zebra, ostrich, Coke's hartebeest (Kongoni), wildebeest, warthog, Impala, Thomsons & Grants' gazelle. We also saw a pair of cheetahs one with a blue tag and the other with a red tag, in its ear.

Conclusions

Number: The number of National Parks, Game Reserves and faunal areas in East Africa currently is 60. Kenya has 22, Uganda 21 and Tanzania 17. (India has 48: B. Seshadri ref. *Twilight of India's Wildlife*).

Variety: These areas comprise grassland, acacia woods, evergreen and tropical rain forests, alpine moorland, heath and bog. There are marine parks and coral gardens at Malindi and Watamu on the coast of Kenya where visitors equipped with goggles can marvel at the sight of multi-coloured fish and varieties of coral.

Area of Parks: Although I cannot recollect the total area in East Africa set aside for parks and reserves, the area in square miles of a few of the large ones will indicate how big they are. Tsavo 8034, Serengeti 5600, Ngorongoro Conservation area 2500, Amboseli 1259, Murchison Falls 1557, Queen Elizabeth 767, and there are many between 200 and 400 square miles. (Total area of Indian Sanctuaries 4700 sq. miles: B. Seshadri).

Revenue: In 1968 Kenya alone earned over £16 million foreign exchange from her parks and sanctuaries. In 1970 this would have been at least £20 million and the total earning for the three countries in East Africa must be close to, if not more than, £50 million (Rupees 90 crores).

Amboseli currently has a gross income of over £250,000 per year which represents more than 60% of the total revenue of the country in which it is, viz. Kajiado. It is hoped that Amboseli will be made a National Park soon and that its earnings will increase over the next 10 years to £2 million.

Accessibility: Most, if not all, these parks and faunal areas are easily accessible either by motorable roads, many of them excellent or by light aircraft; there is a landing strip at practically every park. Extensive use of aircraft is also made for animal counts, especially in open country as at Serengeti.

Accommodation: Accommodation is excellent in the better known parks and reserves and adequate in the others. In the large parks there is accommodation to cater to both the tourist in a hurry who is willing to spend £6 to 8 per day, and to those who plan longer halts on a more modest budget. Amboseli has accommodation at Ol Tukai alone for about 200 persons (accommodation is also available at Namanga in the Western part). About 60 can be accommodated in very well appointed cabins at the Lodge or Hotel and 120 in about 40 Bandas or thatched cottages, with simple furniture but provided with all essentials (linen, crockery, etc.). The charges for Bandas is 20 shillings per person without food which can be had either at the Lodge or prepared in the Banda.

Architecture of Forest Lodges

The lodges, cabins, bandas that I saw were aesthetically conceived and practical. They were simple, of economical construction, and blended with the sylvan surroundings.

Wildlife Service: There is a Wildlife Service which is well paid by national standards and attracts good material. Formerly, staff used to be recruited from the Army and Police, but a few years ago the Moshi School of Wildlife Management was set up at Mweka, Tanzania and management staff for the parks and reserves are now recruited from the men who study at this Institute which is subsidised by the UN.

Literature and Publicity

I have already referred to the excellent work being done by the East African Wildlife Conservation Society, the East African Agriculture and Forestry Research Organisation. In addition, staff and post-graduate students at various colleges also engage in useful research. Their papers are published in various journals and the gist of it is publicised in *Africana*.

There are excellent guidebooks. I have mentioned only two of these. Brochures are available describing the flora and fauna of individual sanctuaries. At the shop in the Amboseli Lodge, I bought for 7 shillings a kind of circular slide rule of cardboard which provides a lot of information about various animals like life span, weight, measurements, gestation period, number of young. This will be a useful educational aid. International organisations like the UN and Ford Foundation also contribute towards research projects.

A Few Examples of Research Projects

Biotelemetry is employed to study the body processes of unrestrained wild animals by means of radio transmission from the animal to a receiving set of heart-beat, respiration, temperature of hair, skin surface, underskin and of specific organs, blood flow, pressure, etc.

Data collected has shown that animals like the Eland and the Oryx exhibit remarkable fluctuations in body temperature—as much as 10° compared to 3°F in cattle. Due to this temperature control, the heat gradient and heat load are lessened and requirement of water (used as a coolant) reduced thus enabling these animals to live in extremely arid areas.

Certain other antelopes have been found to have a coat with remarkable insulating properties so that the skin of these animals remains cool even in the hot sun.

Game Cropping or Utilisation

Arid areas can be employed to breed animals especially adapted for them. It also appears clear, from all evidence so far available, that almost any ecological area left to achieve a natural balance is capable of sustaining a much larger bio mass (animal weight/unit area) than where these have been invaded by domestic cattle. This is obvious when it is understood that in nature, when a balance has been reached, there is little competition for the same food. Predators are nature's device to control population.

Ecological Study of Amboseli

In Amboseli, before the Masai cattle population increased enormously after rinderpest inoculation, there was in hierarchical order of grazing. The elephants fed on the tallest and

rank grasses, followed by buffalo and then the larger and small antelopes, while the giraffe browsed on the foliage of trees. In the dry season the animals moved towards the lake which provided reserve food in the shape of grasses and other succulents.

When the cattle population rose from 65,000 to 250,000 due to rinderpest inoculation, competition for the graze was keen, the elephants turned to feeding on the acacia trees many of which were destroyed in the process, thus depriving the poor soil of the protective hold the root systems of the trees had on it. The vegetation around the lake also attracted the animals much earlier in the season than normally. It no longer served as a reserve for times of drought—and when there was severe drought in 1968, not only did it affect the wild animals but it also reduced the cattle population drastically to 70,000. Meanwhile, the erosion which has been started grows apace and threatens to destroy Amboseli.

Ecological studies are being done on the elephant, buffalo, impala, zebra and the vulture at the Serengeti Research Institute in Tanzania.

Anthrological Studies

Anthropological studies are not neglected. There are several tribes in Africa that have co-existed with the animals for centuries—they are prone to be blamed for the harmful effect their herds of cattle have on the balance of nature. But Dr. Mary Jean Aerni, an anthropologist who has been studying these tribes, has this to say:

“It is not true that the most ardent support for the preservation of animals comes from the most urbanised and affluent communities”. “For the parks to be viewed as animal sanctuaries, they must be viewed as the deepest cultural heritage of the country, rather than as tourist bait”.

Recent Developments

Since they attained independence, Kenya, Uganda and Tanzania have created many new national parks and game reserves. They have used mobile film units to spread the message among the people in little towns and villages that wildlife must be regarded as the country's treasure.

The Wildlife Clubs of Kenya, conceived in 1968 numbered 45 in 1970. Membership comprises secondary school students with from 30 to 60 members per club. The clubs have a permanent Secretary/organiser with headquarters at the National Museum, Nairobi. An annual Seminar is held at one of the National Parks with each club sending a delegate. Field trips are arranged with experts, and the programme includes films, practical observation projects and discussions. The movement is gathering momentum and the number of clubs is expected to double within a year or two.

What we must do in India

48 wilderness areas are listed in B. Seshadri's book, *The Twilight Of India's Wildlife*: of these only a dozen are fairly well known and not more than half a dozen are easily accessible. This situation must be remedied.

We have, unfortunately, no coral formation along any of our mainland coasts, but the Andaman Islands do. Serious efforts must be made to survey these (if existing Naval surveys are not adequate) and to demarcate an area for a marine sanctuary in the Andamans before uncontrolled activity, industrial or otherwise, ruins these treasures for ever.

A list of research projects should be prepared from the practical point of collecting data which will provide a basis for rational conclusions leading to implementing worthwhile conservation measures. There is no reason why such work should not include the study of the cause and effect of pollution in lakes and rivers; the effect of denudation of vegetation on run-off; cultivation in semi-desert areas with the use of brackish water.

There must be a systematic classification of the flora and fauna in every sanctuary in India. Factors that threaten their existence need to be studied and remedial measures spelt out. Universities should be approached to enlist their active participation in these research projects, the idea being not only to do work that is useful but also to make young men and women realise that Natural History is an interesting and satisfying study which should attract more talent to it leading to projects of national importance.

We must develop closer links with the East African organisations that are doing such splendid work so that we may benefit from their advice.

All organisations working in the field of Wildlife and Nature Conservation—BNHS, Wildlife Preservation Society of India, WWF and Bird Watchers Newsletter etc. should coordinate their efforts to save our vanishing heritage.

LIST OF BIRDS

Nakuru 6.2.71 approx. 10.00 hours

- Blacksmith plover (*Hoplopterus armatus*)
- Avocet (*Recurvirostra avosetta*)
- Marabou stork (*Leptoptilos crumeniferus*)
- Wood Ibis (*Ibis ibis*)
- African fish eagle (*Cuncuma vocifer*)
- Kittlitz's Sand plover (*Charadrius pecaurius*)
- White pelican (*Pelecanus onocratalus*)
- South African Black Flycatcher (*Melaenornis pammelaina*)

Naivasha 6.2.71 17.15 hoursAfrican red-knobbed coot (*Fulica cristata*)Purple gallinule (*Porphyrio porphyrio*)Sacred Ibis (*Threskiornis aethiopicus*)Purple heron (*Ardea purpurea*)Blacksmith plover (*Hoplopterus armatus*)Little Stint (*Calidris minuta*)Superb starling (*Spreo superbus*)Blue headed wagtail (*Budytes flavus*)Red eyed dove (*Streptopelia semitorquata*)**Amboseli 7.2.71 11.50-18.00 hours**Red necked spurfowl (*Pternistis cranchii*)Yellow necked spurfowl (*Pternistis leucoscepus*)Spotted stone curlew (*eurhinus capensis*)Ground hornbill (*Bucorvus leadbeateri*)Fiscal shrike (*Lanius collaris*)Drongo (*Discurus adsimilis*)Pin-tailed whydah (*Vidua macroura*)Hildebrandt's starling (*Spreo hildrandti*)Superb starling (*Spreo superbus*)Ring necked dove (*Streptopelia capicola*)Red-billed Fire Finch (*Lagonosticta senegala*)Golden palm weaver (*Ploceus bojeri*)Taveta or Golden Weaver (*Ploceus castaneiceps*)Yellow-vented Bulbul (*Pycnonotus xanthopygos*)Northern Brubru (*Nilaus afer*)Red billed Oxpecker (*Buphagus erythorhynchus*)White-headed Buffalo Weaver (*Bulbalornis albirostris*)**Amboseli 8.2.71 07.00 hours**Blacksmith plover (*Hoplopterus armatus*)Kenya crested Guinea-fowl (*Guttera pucherani*)Stone Partridge (*Ptilopachus petrasus*)Kori Bustard (*Ardeotis kori*)Crowned lapwing (*Stephanibyx coronatus*)White stork (*Ciconia ciconia*)

Roller—I did not identify whether European, Lilac-breasted.

Rufous—crowned or Broad-billed.

Naivasha 9.2.71 11.50 hours

- Anteater Chat (*Myrmecocichla aethiops*)
 Reichenow's Weaver (*Othyphantes reichenowii*)
 Robin Chat (*Cossypha caffra*)
 Goliath heron (*Ardea goliath*)
 Osprey (*Pandion haliaetus*)
 Glossy Ibis (*Plegadis falcinellus*)
 Yellow-billed egret (*Mesophoyx intermedius*)
 Purple heron (*Ardea purpurea*)
 Pied Kingfisher (*Ceryle rudis*)
 Moorhen (*Gallinula chloropus*)
 Dabchick (*Poliocephalus ruficollis*)
 Marsh Sandpiper (*Tringa stagnatilis*)
 African Jacana (*Actophilornis africanus*)
 Long-tailed Cormorant (*Phalacrocorax africanus*)
 Malachite kingfisher (*Corythornis cristata*)
 Red knobbed Coot (*Fulica cristata*)
 European Coot (*Fulica atra*)
 Pied Wagtail (*Motacilla aguimp*)
 African Fish eagle (*Cuncuma vocifer*)
 Blacksmith plover (*Hoplopterus armatus*)
 African Darter (*Anhinga rufa*)
 Purple Gallinule (*Porphyrio porphyrio*)
 Crowned Crane (*Balearica regulorum*)
 Green Wood hoopoe (*Phoeniculus purpureus*)
 (on Crescent Island)

“The Wonder Tree” of Uttar Pradesh

By

GIRI RAJ SINGH

Most plant life, specially young first year plants and seedlings, have a tough time surviving in the Uttar Pradesh Forests, specially in the Tarai belt and the forests at the base of the Himalayan Foot Hills. The first hazard is the heavy frost in the winter months of December and January. Some years the frost is so heavy that it hangs like an icicle from bushes and kills off most of the younger plant life. Water left out in buckets at night gets a layer of ice 2 inches thick, by morning. One of the few plants to survive this frost is our “Wonder Tree”.

The second hazard to young plant life is the grazing and browsing by deer and cattle. Thanks to poachers, the deer do not now present much of a problem—but the cattle are numerous and all over the place. India is said to possess one fourth of the entire cattle population of the world. In going through the forests of Uttar Pradesh, one gets the impression that this entire cattle population is concentrated mainly in these forests. However “The Wonder Tree” escapes the attention of the cattle, as the leaves are not edible.

The third hazard to plant life are the wild elephants which are quite numerous and very destructive in certain forest areas of Uttar Pradesh. These elephants seem to delight in knocking over or uprooting young saplings, just for the fun of it. Many a shisham tree, and other plantations of other trees have been completely destroyed by elephants in the past. But once again “The Wonder Tree” manages to survive, as for some reasons, the wild elephants seem to go out of their way to avoid contact with it.

Having successfully survived hazards that would have killed off most other plant life—our “Wonder Tree” shoots up to a height of 25 ft. or more in a short period of three years. By now you have probably guessed it, that the “Wonder Tree” is none other than the Eucalyptus, vast plantations of which now cover thousands of acres of Uttar Pradesh forest land, and are considered the pride of the Uttar Pradesh Forest Department. Many a foreign dignitary and V.I.Ps such as the late King of Nepal have had conducted tours of these plantations.

It had been originally envisaged, that once these eucalyptus plantations came up, industrialist would put up factories all over, to utilize this raw product for producing paper and rayon pulp. But something seems to have gone wrong somewhere—as no such factories have yet come up for this purpose. It is said that some previously established paper factories are reluctantly prepared to utilize eucalyptus trees, but they are not willing to pay even the actual cost of production of these trees.

I have had the opportunity to entertain some foreign tourists for shikar in Uttar Pradesh forests. Some of these people have been in the paper and rayon pulp business themselves. Without exception, they were all shocked and surprised to see our large eucalyptus plantations. They were of view that eucalyptus makes a very inferior type of paper and rayon pulp. They said that this tree had proved a failure for this purpose, not only in its mother land Australia, but also in experiments in USA etc.

It has to be admitted, that these eucalyptus plantations do present an impressive sight—neatly planted, evenly spaced, row upon row of slender trees rising to a great height. In themselves, these plantations are a great achievement and our forest department is rightly proud of them. But as one walks or drives through miles and miles of these trees, one cannot help but feel depressed and sad. This feeling of sadness is heightened by the all pervading deathly silence which is broken only by the gentle sighing of the breeze in the tree tops. One wonders at the fate of the teeming bird and animal life that was once so plentiful in these areas only a few years back, when indigenous forests covered this land. What has happened to the multitude of birds that once filled the air with their bright plumage and song? Where are the monkeys that once frolicked in the tree tops? Gone also are the vast herds of deer that were so common. The dusty roads are now free of any signs of tiger or leopard pug marks, so numerous in years gone by.

Others may not agree with me, and I may well be wrong—but I feel that ecological balance has been dangerously tampered with, in replacing our indigenous forests by eucalyptus plantations. The eucalyptus provides neither food nor shelter to bird and beast. The branches are quite unsuitable for bird-nests. There are no berries, fruit or edible buds for birds and monkeys to live on. The eucalyptus does not encourage leafy undergrowth, so essential for wild life habitation. Whatever grassy undergrowth does come up, has to be kept clear for fear of accidental fires, as due to its oil the eucalyptus would probably burn like gun powder. The wood of this tree is quite useless as timber, and is also unsuitable even as fuel wood.

Thinking of all this, one cannot be blamed for asking—why this colossal waste of money, effort and time? There must be, there has to be, some rational explanation—if not, then it appears that a grievous injustice has been done—injustice to nature, which never meant our indigenous forest lands to be converted into artificially planted parks, injustice to wild life that has been dispersed and eliminated due to deliberate destruction of its habitat; injustice to our future generations, who will never know what gorgeous indigenous forests we once had, or what nature and variety of wild life once existed there.

In putting up these large eucalyptus plantations, the forest Department has practically had to take over the functions of the Agricultural Department. As, large fleets of tractors and expensive agricultural equipment has had to be kept, and to repair and maintain this, big workshops had to be set up. Even now, in the earlier stages of a eucalyptus plantation, the

land is leased out to contractors to plant agricultural crops — a whole time job could have been made of this? If it was considered absolutely essential and necessary to uproot the indigenous forests and destroy wild life habitat—would it not have been more practicable and profitable, that instead of eucalyptus, these vast areas had been utilized for agricultural cash crops such as sugar cane, wheat and paddy etc. This would have brought a much quicker and better return, than can ever be hoped from the eucalyptus.

It would not be much of a loss, if even now these large scale eucalyptus plantations are completely done away with. The land could then be better utilized either for plantations of quick growing lesser timbers or Khair trees etc. which would bring a better return and would also help to rehabilitate our disappearing wild life. Or the entire area could be turned into a vast agricultural farm. Even the latter would be better than eucalyptus, though it would mean the end of wawtever little wild life that is still managing to survive.

Report of the Wild Life Preservation and Game Association of Eastern India, Calcutta

Wild Life Week-1971

It is most appropriate that Wild Life Week should be celebrated every year beginning with the birthday of Mahatma Gandhi. The problem of preservation of wild life in India has assumed a serious character to-day. The usual programme is observed every year, but the implementation of the programme does not have the desired impact. As a result, wild life in India has suffered and some species are on the verge of extinction.

The Wild Life Preservation & Game Association of Eastern India which has its head-quarter in Calcutta, has just completed the observation of an attractive week in the interest of the wild life in India. The programme of the Association included 16 films on wild life, 7 of which were kindly supplied by the Consulate General of the Federal Republic of Germany, 3 supplied by the Birla Industrial & Technological Museum produced in USSR, USA and Canada. The Forest Department and the Department of Information and Public Relations, Government of West Bengal co-operated with us by lending us 5 films on forest and wild life. The local tourist office of the Government of India also obliged us by giving the Association a beautiful coloured film on wild life. The Association is grateful to all the above authorities and the authority of Max Muller Bhavan, Calcutta for their kind co-operation without which the celebration could not have been the success that it was.

The Week was inaugurated by Mrs. Annie Wright, local representative of the World Wildlife Fund—Indian National Appeal. In the course of her address she explained the activities of the World Wildlife Fund and appealed to all concerned for whole-hearted support and co-operation. The Vice-President of the Association Mr. P.K. Sen Gupta, a renowned bird-watcher, who presided at the function, laid stress on the necessity of promoting the practical programme of wild life welfare. The key-note address of the evening was delivered by Maharaja Bhupendra Chandra Singha Bahadur of Susang. He spoke on elephant capturing and training and illustrated his talk with slides, which were minitures of his own paintings. Mr. Biswanath Bose, the General Secretary indicated at the meeting the necessity for close co-operation between the Government and the public in general in the promotion of wildlife preservation and welfare. In this connection he mentioned the desirability of establishing in West Bengal, a State Wild Life Board.

On the second day of the celebration the President of the Association Prof. Nirmal Chandra Bhattacharyya referred to some of the acute problems of wild life preservation in India and appealed to the audience to take the following Wild Life Pledge adopted by the India Board for Wild Life:

Pledge

“Convinced of the fundamental importance of conserving the natural environment, upon which rest the foundation of human civilization, I solemnly pledge that I will spare

no effort to preserve our vanishing wild life and our dwindling forest areas which our generation holds in trust for posterity”.

On the 9th of October, the closing day of the celebration, Mrs. R.A. Traill, associated representative of the World Wildlife Fund, briefly related to the audience a short history of the world-wide movement for the preservation of wild life in different countries. Mr. B. Bose, the General Secretary while thanking all concerned, including the large appreciative audiences who attended each day's functions, appealed to all for strengthening the Association. He also stated that the Association had adopted a constructive programme including the formation of groups in different schools and colleges to be called 'The Young Lovers of Wild Life' as also an ecological survey in the man-eater infested jungle of SUNDERVANS.

It may be remembered that the Association had in its members list two names which have acquired international reputation in the field of preservation of wild life. They are the late E.P. Gee and Mr. P.D. Stracey. Proud of our Association with such distinguished personalities, we are following in their footsteps.

A Summary of A Grazing Ecosystem in the Serengeti:

Richard H.V. Bell

From Scientific American—July '71

(CONTRIBUTED BY SHRI G.S. RANGANATHAN)

Richard Bell's most useful study establishes the migratory pattern of four of the major herbivores comprising approximately 7,00,000 animals in the Serengeti area and the reasons for this pattern which are due to their varying diets. Bell also refers to the interdependence between these species.

The Serengeti ecological unit is 9000 sq. miles in area of which the Serengeti National Park (5600 sq. miles) forms the central unit. Ecological research here was started in 1957 by W.N. Pearsell of the University College, London and continued by Bernhard Grzimek and his son Michael who made aerial studies. The Serengeti Research Institute is operated by the Tanzanian National Park with aid from several international organisations.

The four animals studied, their average individual weight and their numbers in the Serengeti area are shown in the table below:—

<i>Animal</i>	<i>Wt. of average adult female in kg.</i>	<i>Population</i>
Zebra	219	220,000
Wildbeest	163	330,000
Topi	108	20, 000
Thompson's Gazelle	16	150,000

Difference in diet due to difference in digestive systems and metabolic rates

The difference in dietary habits in herbivores depends on their size and whether they are ruminants like cows and deer or non-ruminants like horses and zebras.

A ruminant's digestive system is more efficient at extracting protein from plants than a non-ruminant's because it has an arrangement for the recycling and reconstitution of protein which the non-ruminant lacks. However, the ruminant's ability to extract protein decreases with an increase of the cell-wall thickness of the plant it eats.

A non-ruminant makes up for its lower efficiency in protein extraction by its ability to eat more rapidly (material passes twice as fast through the gut of the horse as it does through the gut of a cow) as well as by its ability to derive protein and energy building constituents even from the coarser grasses (i.e. with thicker cell-walls) which are not suitable for ruminants.

The relative maintenance requirement of a smaller animal is higher than for a larger animal because of its higher metabolic rate (due to a higher surface/weight ratio). It obtains

this by feeding on plants higher in protein content. In their diet, small animals optimise on quality; large animals, particularly non-ruminants, on quantity.

Protein distribution at various levels and feeding sequence

The highest concentration of protein is in the lowest level of the vegetation. This is relatively inaccessible to grazers because of the dense grass stems and culms above it, which are low in protein. Below this are stems and leaves of shorter grass, and lower still, the leaves of even smaller grasses. An examination was made of the stomach content of the four grazing species according to whether the plant was monocotyledon (grass) or dicotyledon (most other plants in the herbs layer) and also according to parts of plant, fruit, stem, leaf and sheath.

Thomson's gazelle only contained a large amount of dicotyledon—40%, chiefly fruit, precisely the high energy package expected for that small animal. The stomachs of the other three contained almost entirely grass and showed a clear separation in the proportions of leaf to stem (and culm). Wildebeest contained the most leaf, zebra the least and topi were intermediate.

Zebras take their diet, highest in cell-wall constituents, from the top of the herblayer. Topi and wildebeest take a higher protein diet from the leafy levels below. Gazelles take the high protein fruits from the ground. Except for topi this series corresponds with the order of decreasing body size.

Distribution of diet in the ecological unit and migratory pattern

The Serengeti region consists of three zones arranged in a triangle. In the Southwest are vast plains of volcanic soil. The rainfall here is scanty and the grass therefore, short. In the West, rainfall is higher and the grass longer. Finally, the North has the highest rainfall and the thickest grass and vegetation.

The Serengeti plains in the Southwest have a topography described as catenary consisting of undulating land where the grass formation is similar to its distribution in the three main regions of the whole ecological unit. The tallest grass is at the bottom of hillocks (because of accumulation of moisture), shorter grass on the slopes and the shortest near the top.

The feeding sequence seen on a small scale on the catena is repeated in the mass migrations when seasons change. In the wet season, grazers concentrate in mixed groups on the raised areas where grass is shortest. In the dry season the animals are forced to descend into the longer grasses, first the large animals, followed by the smaller. When it turns drier the animals migrate, first to the West and finally to the North. The larger animals make the vegetation suitable for the following animals. The pattern is repeated (with variations) all over the African Savannah.

Conclusion

The pastoralist has been a member of the grazing succession through burning and grazing his cattle. The cultivator with his fence has interfered with the movement of wild animals and has brought about a reduction of their range and numbers. A reduction in the number of one species by disease or hunting could lead to a reduction in the number of another species. The scientist must now understand the working of the system as a whole and suggest integrated patterns of land use taking into account the interests of the pastoralist, the cultivator and the tourist.

I have summarised Richard Bell's article because ecological studies patterned on it are very important for India. Our universities should start work on such studies and come out with proposals based on them, suggesting the best economical use of our land resources in which utilization (or game cropping) could contribute valuably.

Wild Life and Medical Science

By

M. THYAGARAJAN, I.F.S.

Abu Ali ibn Sina, referred to by some as the "Teacher of scientist" and the "Shah of Doctors", in his monumental work "The Canon of Medical Science" lists a few hundreds of remedies based on animal products, some of which are still widely used in modern medicine. However, the vast majority of the medicines prescribed by him 1,000 years ago have been forgotten and this stage of our knowledge will be relegated to the realm of quackery. Soviet ornithologists found that the local population of the Pamirs administer the bile of the Central Asian Golden eagle and that of the Sea eagle, to patients suffering from strong headaches and those from mental disorders. They also use the bile of the Mountain turkey to cure gastric and ophthalmic diseases. Abu Ali ibn Sina wrote about these medicines 1000 years ago and the Soviet pharmacologists now believe that these prescriptions have been borrowed by him from folk medicine. Finding that some of his prescriptions have some basis the Soviet Scientists are engaged in a careful study of the pharmacopeia of this ancient medical scientist.

The emergence of modern medical science based on systematic studies itself owes much to wild life. Comparative anatomy—the study of similarities and variations in the structure of the various organs of animals belonging to different groups—has been the basis for the understanding of the anatomy of the human body. Studies in the physiology as well as in experimental physiology of different animals have unravelled some of the mysteries of the physiology of the human body. Wild life is playing a vital role in the great strides that the medical science is making in this space age.

Space Travel

One of the first space travellers was the monkeys. The effect of space travel on these animals had to be studied carefully before man could venture into space. The effect of radiation damage on space travellers and their ability to recover and perform useful work on long inter-planetary voyages was the subject of a special study conducted at the Los Alamos Scientific Laboratory in New Mexico. The scientists chose for this study, animals of the species *Macaca speciosa*. One of the monkeys, Nancy, was subject to intensive radiation treatment and according to accepted present day concepts, Nancy should have died due to radiation induced aplastic anaemia. Indeed seven other monkeys which received a similar treatment of 1528 rads. of Gamma radiation died at different stages. But Nancy did not! And, more, Nancy should have lost her fertility after such a large radiation dose. But she did not! To the surprise of the scientists Nancy became pregnant and gave birth to a normal male baby. This has proved that individual animals have varying resistance to radiation

damage. Work on the animals of certain species of rodents had revealed that they fail to recover fertility once they have been rendered infertile by radiation. Males of these animals which become infertile by radiation exposure recover from its effect. This has opened up new possibilities in family planning. Training is given to a large number of monkeys of various species at the 'Monkey College' in the U.S. Air Force Aero-medical Research Laboratory of Holloman Air Force Space Research Organisation to enable them to carry out their functions in space travel.

Polio Vaccine.

Antipolio vaccines, a preventive to that dreaded disease afflicting children, are prepared from the living kidney tissues of different monkeys. Salk's antipolio vaccine is prepared from the kidney tissues of the Rhesus monkeys common in Northern and Central India. Sabin's oral vaccine in the Soviet Union is prepared from the kidney tissue cultures of the African Green monkey. In India this oral vaccine is prepared at the Institute of Communicable Diseases (Pasteur Institute), Coonoor, Tamil Nadu from the kidney tissue cultures of the Bonnet monkey common in the Peninsular India.

Surgical Shock

There are indications of the possibility of a startling discovery of a chemical developed in animals that would increase shock resistance in patients. It is well known that wild animals, even when lethally wounded by rifle fire do not die but are able to survive, surprisingly, for long periods and show unusual stamina. It was considered that this was made possible by the secretion of adrenalin from the adrenalin glands situated near the kidneys. Dr. Richard A. Gilbert believes that this faculty exhibited by the wild animals is due to a different body chemical previously unrecognised, in addition to adrenalin, and possibly associated with it. If such a chemical could be isolated, Dr. Gilbert says, it or some synthetic counterpart of it, might be administered to surgical patients prior to extensive operations enabling them to withstand severe surgical shocks. Dr. Gilbert has been hunting wild animals like lion, leopard, buffalo and elephants in Africa in his attempt to study and isolate this chemical. Since rifle fire causes damages to tissues and brings in complications, he has been shooting them with arrows.

Nerve Impulses

Scientists have found that the Electric fish creates an electric current in the surrounding waters. If the current is deflected by an object, it returns to the fish's body in a slightly different location enabling it to sense where the object is. According to Dr. Bullock, analysis of these electrical impulses could provide some clue as to how the human brain detects the electricity of nerve impulses and even perhaps how the body codes and decodes sensory messages.

Heart Diseases

A woman scientist has been on a hunting expedition in Africa to study the cardiovascular diseases in African mammals and birds in their natural habitat. Dr. Sylvia Sikes, a Kenya born Zoologist, had shot 40 elephants in Africa under a study project she had undertaken for Nuffield Institute of Comparative Medicine and financed by a grant from the British Heart Foundation. An initial study done on 35 species of mammals and 45 birds in Africa showed that only primates and elephants were subject to atheroma (the fatty build-up on the inside of vital arteries). She had therefore to choose between elephants and chimpanzees and since chimpanzees were protected animals she was forced to take up the study on elephants. Her studies had shown that elephants living in undisturbed interior forests show little atheroma and those shot in degenerate vegetation associated with over crowding and other forms of stresses and strains show marked increase in atheroma. These animals also showed medial sclerosis (calcium build-up in the layer of arteries). By carefully analysing the results Dr. Sikes adds a third cause viz., the environment and its stresses and strains to the two other known causes of heart disease viz., fatty foods and lack of exercise. According to her the cause of the cholesterol deposition in man's arteries is both psychosomatic as well as physiological.

Heart Transplants

In the year 1967 Dr. Christian Bernard of South Africa hits the headlines by his heart transplant operation. Since then heart transplant operations have fired the imagination of the public and raised high hopes in persons suffering from serious heart diseases. But a heart transplant in a human being is not new. In the year 1964 Dr. J.D. Hardy took the heart of a Chimpanzee and transplanted it into a very sick man. The operation was "technically successful" but the patient died after two hours. What was new in Dr. Bernard's operation was experimenting with transplants of hearts *from one human to another*. Of the many problems associated with the heart transplant was the problem of finding suitable donors in view of the increasing number of such operations. According to Dr. Bernard no artificial heart has yet been developed to meet the situation. According to him we may have to turn to hearts of animals and that baboons might be the ideal choice. Even here experimental work on the harmful side effects of organ transplants were tried on the baboons. Dr. Hans-Dieter Brede an Immunology Specialist of South Africa performed heart and kidney transplant operations on baboons using the drug thalidomide to counter the problem of tissue rejection and he has been successful. The British Medical Association has formed a long range Committee to deal with the question of heart transplants. According to the Committee Chairman, Prof. Henry Miller, the question of an artificial heart is beset with innumerable problems and at present the only way to meet the situation was to plan for huge colonies of Chimpanzee donors.

Note on Zoological Park, Kanpur

A modern Zoological Park is being raised by U.P. Forest Department in Allen Forest in Kanpur city over an area of 185 acres. The animal enclosures, being erected in this zoo are based on latest trends in zoo building. The unique features of the site selected are a picturesque lake, spreading over 40 acres in the heart of the area and its gently undulating terrain with forest cover. While building the enclosures, maximum care is being taken to retain the natural look of the terrain and vegetation in and around the enclosures.

As proposed, the zoo will house about 55 animal species and 40 birds species of Indian subcontinent, besides having about a dozen principal animal and bird species from Africa, 8 from Australia, 10 from Central and South America, 2 from North America and 2 from Japan. The above animal and population may even increase depending upon the availability of species exotic or indigenous.

Other recreational features in the zoo will include, boating and fishing in the lake, elephant and camel ride, childer's rail and children's zoo, museum and picnic in the wild surroundings, set aside separately.

(R.S. Bhadauria)

Divisional Forest Officer,
Kanpur Zoological Park,
KANPUR.

Letters to the Editor

I

Dear Sir,

In the March 1971 issue of the CHEETAL which I came across recently I read the very interesting report on the Periyar Wildlife Sanctuary by Mr. G.U. Kurup. Among other things Mr. Kurup states that "wild dogs in this sanctuary have wiped out the spotted deer and there is not even a sight record of this deer for the last twenty years though the species is known to have existed here in the recent past, according to earlier records."

However during a trip to this sanctuary in May 1969, I had seen several heads of spotted deer on the outer periphery of the sanctuary. I do not know whether these were from the stock introduced there, but I do not think so because the deer were quite shy which would not be the case had they been used to human presence. I would like to know more about the experiment of the introduction of spotted deer in this sanctuary, i.e., the date of introduction, census and behaviour thereafter, probable date of extermination by wild dogs, in any of this data is available with any of your readers.

Entering the sanctuary from Madras side, there is a forest checkpost of the sanctuary. Immediately thereafter, there is a forest road climbing steeply to the left. After about a mile or so, the road reaches what appeared to me at night as a plateau; the flat land reminiscent more of our Uttar Pradesh forests which I am familiar with, rather than the wet evergreen forests around the Periyar lake. It was here that I saw about three herds of spotted deer, no herd comprising of more than two or three animals. The sighting was done at night with a torch and in the headlights of my car but there was no doubt as to the identity of the deer.

Next day while visiting the Edappalayam bungalow in a fine drizzle, I felt the terrain was unsuitable for spotted deer, but I had seen them the previous night. I saw plenty of elephants, gaur and wildboar around the Edappalayam bungalow. My guide told me that he had seen a tiger there the previous day. It is truly a magnificent spot.

Incidentally, I wonder why the tiger population in this Sanctuary is not increasing when there is adequate cover and food. This problem is equally relevant to the Bandipur-Maddumalai Sanctuaries. There are certainly some tigers in these areas but pug marks or sightings of cubs have not been reported for years. Is it because the number of tigers has fallen below the level at which they can come together for mating or is it that the remaining tigers are too old to mate? I asked this question of the wildlife officer of the Madras Government, but he could not give an answer. If one of the foregoing is the reason for tigers not mating, would it not be possible to localise a female by tying baits in her known haunts and hoping she would attract a male in due course? If old age is the problem,

introduction of young tigers from other areas would be an answer. Certainly a study is called for, because Periyar as well as Bandipur and Maddumalai certainly have other conditions suitable to maintain a reasonable tiger population.

Yours faithfully,
A. Kumar.

* * *

II

Her Excellency
The Prime Minister of India
Indira Gandhi
New Delhi
India

Aug. 10, 1971
Y/rmr

Your Excellency,

The "Zoological Society of 1858", Frankfurt am Main is organising since more than ten years photosafaris into the National Parks of Africa and was trying to expand this program to India. I myself pointed this out in my television programs several times. These programs are regularly seen by 35 million people. Amongst these programs I talked once 45 minutes about my visits to Indian National Parks. Our agent is the travel agency Marco Polo. These tours have been carried out for several years. Unfortunately, they have to be stopped now. We had too many complaints through the travelling companions and through the guests, and even trials were threatened the Marco Polo travel agency for not adherence to the promised programs.

It was always complained that most of the safari lodges do not even meet with the simplest claims. E.g. in the Corbet National Park there are woollen blankets missing since many years. It is mostly severely cold there at night so that the guests were freezing. Also the food is said to be insufficient there. On one of the last tours, our agent had a written confirmation for the group for the Manas National Park in hands. When they arrived, one of the boys informed the group that the manager was absent. Neither food nor beverages were on hand. The same was with clean bed-clothes. Since a flight back was only possible two days later, the group had to stay there under the most primitive conditions. You can imagine, Your Excellency, that this led to considerable disgust of the clients. These are only a few examples, we could quote quite a few more. In any case, unfortunately, all these things made it necessary to cancel the tours from now on to India. The travelling companions had also the impression that the Indian National Park Administrations are absolutely disinterested and no improvements could be seen on the shelters during the course of the development. I regret all this very much since we undertook so much trouble in getting these tours going, and also the travel agency Marco Polo was trying hard to increase the number of participants yearly.

You without doubt know to which important foreign currency factor the income through tourism visiting the National Parks has become in Africa, In Kenya e.g., the income of foreign exchange through the tourists lies-besides the sale of coffee-on one of the first places. We have tried through our propaganda to help with this also the National Parks of your country, since we are firmly convinced that with this India could contribute considerably by its efforts to preserve its fauna. I did not want to omit to inform Your Excellency about this and about the fact that we unfortunately have to cancel from now on the tours as well as the propaganda for the above mentioned reasons.

Respectfully yours,
(Sd. Prof. Dr. Crzimek)

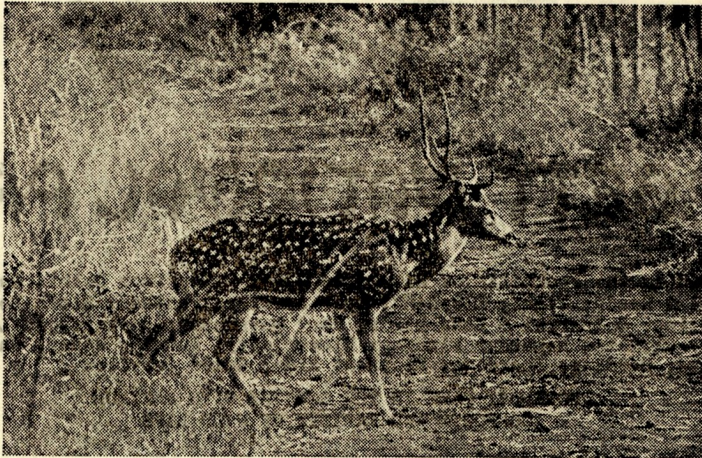
A tree is known by the fruits it bears;

A forest is known by the animals it rears.

Come and see it for yourself

Visit:

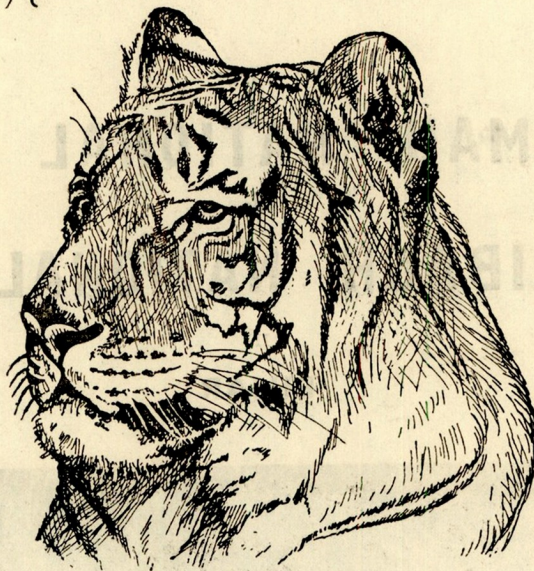
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AND TIGERS ROAR**



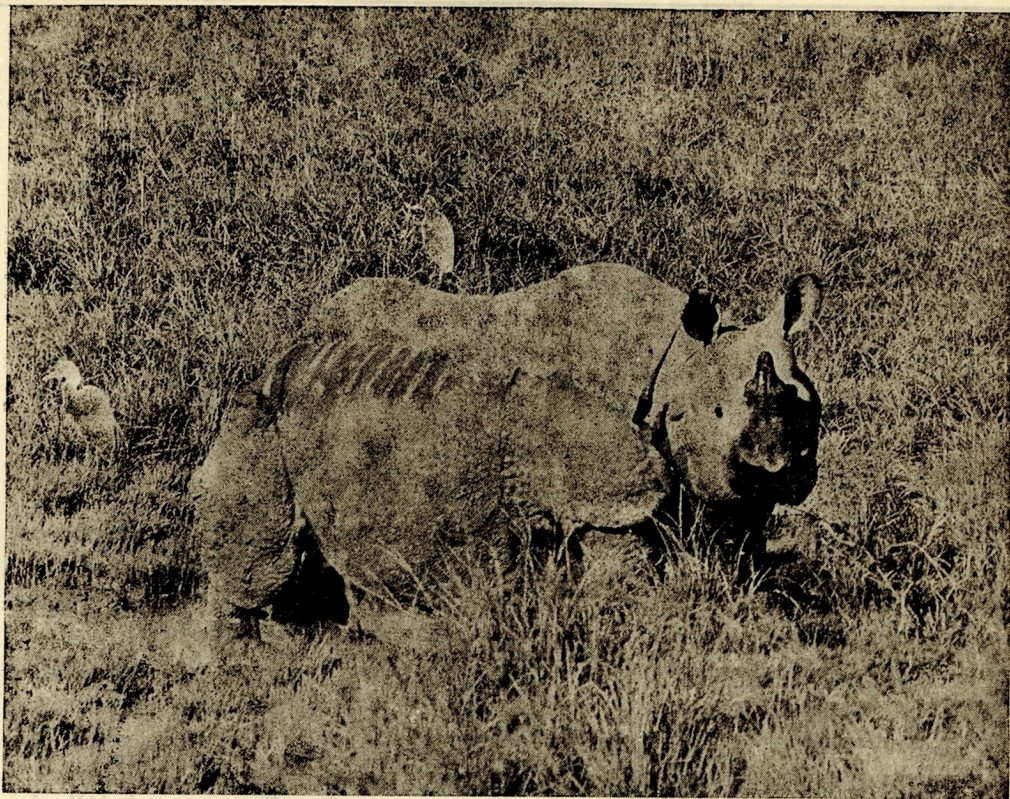
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What about India ?

The number of visitors to India has increased. From 150,000 in 1964 to almost 245,000 in 1969. And our earnings from tourism have gone up to Rs. 33 crores in foreign exchange.

But in terms of world tourism, India got only one out of every thousand world travellers last year. Yet we have just about everything to make India the world's most attractive tourist destination.

What's missing here ?

Nothing but broad-based public participation. And enough of what is known as the 'infrastructure' : hotel accommodation, transport facilities and tourist amenities. For instance, the city of Bangkok alone has more hotel beds suitable for tourists than the whole of India !

And when the Jumbo jets come, bringing many thousand more visitors our way, we shall need all these amenities in far greater measure.

What are we doing about it ?

The Government is actively involved in the building of new hotels, improving air and transport services, providing new and better tourist facilities.

But that is not enough. Because Tourism is everybody's business. It involves people at every level all over the country. So join us in our efforts. Let us give the tourist the amenities he needs and see that he goes home happy. Each happy tourist means so many more will come next year. Shouldn't be too difficult for us. Isn't ours one of the world's oldest traditions in hospitality ?



Department of Tourism
Government of India